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Wastewater in Receiving Waters at Water Supply Abstraction Points

SCS Engineers, Inc.
Redmond, WA

Prepared for

Municipal Environmental Research Lab.
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16. ABSTRACT

The purpose of this project was to determine how much wastewater and wastewater-derived material from discharges is present in the surface water supplies of U.S. cities of over 25,000 population. The study identifies 1246 municipal water supply utilities using surface water from 194 basins serving 525 cities with populations greater than 25,000. The results are tabulated to show for each utility: the number of upstream wastewater dischargers by type, estimation of cumulated wastewater discharge flow and the ratio of wastewater flow to stream or river flow. The results ranged from 142 utilities with no dischargers identified to many utilities where the wastewater constitutes a major portion of the water supply. Several utilities were determined to be using water from a source whose low flow was less than the combined upstream discharge flows. Water supplies serving cities near the bottom of large river basins were found to contain wastewater from several thousand dischargers. However, those utilities with the highest percentage of wastewater relative to supply flow were generally from small- to medium-sized creeks and rivers. Twenty cities with a total population of over seven million were determined to have surface water supplies containing from 2.3 percent to 16 percent wastewater during average flow conditions and from 8 percent to 350 percent wastewater during low flow conditions.

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WASTEWATER IN RECEIVING WATERS AT WATER SUPPLY ABSTRACTION POINTS

by

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FOREWORD

The U.S Environmental Protection Agency was created because of increasing public and government concern about the dangers of pollution to the health and welfare of the American people. Noxious air, foul water, and spoiled land are tragic testimonies to the deterioration of our natural environment. The complexity of that environment and the interplay of its components require a concentrated and integrated attack on the problem.

Research and development is that necessary first step in problem solution; it involves defining the problem, measuring its impact, and searching for solutions. The Municipal Environmental Research Laboratory develops new and improved technology and systems to prevent, treat, and manage wastewater and solid and hazardous waste pollutant discharges from municipal and community sources, to preserve and treat public drinking water supplies, and to minimize the adverse economic, social, health, and aesthetic effects of pollution. This publication is one of the products of that research and provides a most vital communications link between the researcher and the user community.

This report describes the results of a study to determine the present degree and extent to which surface waters used as domestic supplies contain wastewaters from upstream sources. It is hoped that these data will be helpful to those agencies concerned with both water supply and wastewater management problems

Francis T. Mayo, Director
Municipal Environmental Research
Laboratory

ABSTRACT

The indirect, unplanned reuse of wastewater for domestic purposes is widespread. Wastewater sometimes represents a significant portion of the total flow in many receiving waters. Since the typical wastewater treatment plant does not remove all of the contaminants from the wastewater, concern exists about the health risk to downstream water supplies. Thus there is a need to know the appropriate levels of municipal treatment to ensure the safety of water supply intakes in the vicinity of the discharges. The first step in better understanding the significance of this problem is to find out the present degree and extent to which surface waters used as domestic supplies contain wastewaters from upstream. The purpose of this project was to determine how much wastewater and wastewater-derived material from discharges is present in the surface water supplies of U.S. cities with populations greater than 25,000.

The study identifies 1246 municipal water supply utilities using surface water from 194 basins serving 525 cities with populations greater than 25,000. The results are tabulated to show for each utility the number of upstream wastewater dischargers by type, an estimate of cumulated wastewater discharge flow, and the ratio of wastewater flow to stream or river flow. The results ranged from 142 utilities with no dischargers identified to many utilities where the wastewater constituted a major portion of the water supply. Several utilities were determined to be using water from a source whose low flow was less than the combined upstream discharge flows. Water supplies serving cities near the bottom of large river basins were found to contain wastewater from several thousand dischargers. However, those utilities with the highest percentage of wastewater relative to supply flow were generally from small- to medium-sized creeks and rivers. Twenty cities with a total population of more than 7 million were determined to have surface water supplies containing 2.3 to 16 percent wastewater during average flow conditions and 8 to 350 percent wastewater during low flow conditions.

This report was submitted in fulfillment of Contract No. 68-03-2592 by SCS Engineers under the sponsorship of the U.S. Environmental Protection Agency. This report covers the period August 15, 1977, to January 15, 1979, and work was completed as of February 16, 1979.

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LIST OF ABBREVIATIONS AND SYMBOLS

ABBREVIATIONS

BOD	--Biological oxygen demand
CMF	--City Master File
CM/m	--Cubic meters per minute
IFD	--Industrial Facility Discharge File
IPWS	--Inventory Public Water Supplies
kkg/day	--1000 kilograms/day - metric ton/day
mg/l	--Milligrams per liter
MWFI	--Municipal Waste Facilities Inventory
NAWDEX	--National Water Data Exchange
NEEDS	--Survey of Needs for Municipal Water Treatment Facilities (1976)
NRDC	--Natural Resources Defense Council
PCS	--Permit Compliance System
PUB	--Public Utility Basin
SIC	--Standard Industrial Classification
WIRW	--Wastewater in Receiving Water System
USGS	--United States Geological Survey
MDSD	--Monitoring and Data Support Division
EGD	--Effluent Guideline Division

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SECTION 1

INTRODUCTION

GOAL

The goal of this study was to determine the impact of upstream wastewater dischargers at the point of the water intake for municipal water supply utilities serving populations over 25,000. This was to be accomplished using presently available data and information contained in computer files, reports and other documentation.

Objectives

The objectives of this study were to:

1. Identify all utilities supplying surface water to populations over 25,000.
2. Identify respective surface water names and intake points.
3. Identify all municipal and industrial dischargers upstream from the utility intake points.
4. Determine respective municipal discharger categories (primary, secondary, tertiary), flow and BOD loads and industrial categories (SIC codes).
5. Determine annual average and 7 day, 10 year low flows at each intake point.
6. Determine ratio of the sum of municipal discharger flows to water supply source flow (percent wastewater in drinking water).
7. For selected sites, estimate BOD load caused by upstream municipal dischargers at supply intake points.

Approach

The general approach to meeting these objectives can be described as follows:

1. Utilities serving over 25,000 persons and the names of their respective source waters were located using the EPA Inventory of Public Water Supplies (IPWS) File. This file yielded 1,246 source waters serving 540 utilities. Although the IPWS file is not complete, it was considered to be the best source available.

2. Identities of the surface source waters and the utilities' water intake points were also determined using the IPWS file. Unfortunately, the location (latitude and longitude) of the intake points often was not available. For these cases, it was assumed that the intake point was located at the shortest distance between the city and the source water.

3. Identities of upstream dischargers were determined using the Permit Compliance System (PCS). While this file provides facility identities, it does not contain location data more precise than city or county name, nor does it contain discharge flow data or receiving water names. The procedure used was to sort the PCS file by county and city names, and make discharge assignments to the nearest surface water.

4. Flow and BOD loadings for municipal dischargers were obtained from the Municipal Waste Facilities Inventory (MWFI) File and the Survey of Needs for Municipal Water Treatment Facilities (NEEDS) File. Unfortunately, the MWFI file is generally out of date and contains limited flow data. The NEEDS file contains good data on flow, but contains only about 50 percent of the total number of municipal dischargers. Locational data (latitude, longitude, or receiving water name) were also generally lacking in these files.

5. Source water supply flow data were also often difficult to obtain. A search of United States Geologic Survey (USGS) data files showed that out of 12,484 stations, less than 5,000 had sufficient data to compute an annual average flow statistic, and less than 3,500 had sufficient data to compute 7 day, 10 year low flow statistics. Gauging stations with data were often not close to intake points; therefore, flows had to be approximated by extrapolation or, in some cases, left blank.

6. A computerized data base was developed to store all the relevant data on cities, utilities, source waters, and dischargers. A combination of computer and manual procedures were used to accumulate data on upstream dischargers from each intake point.

7. Discharger location or river mile distances between dischargers and the utility were generally not available. Therefore, it was assumed that dischargers were concentrated

at points midway between each adjacent upstream utility as a means of providing necessary data for BOD fate models.

8. A detailed accounting of the types of industrial uses was accomplished by examining the Standard Industrial Classification (SIC) Code provided by the PCS file. Dischargers were divided into 28 types. Twenty-one types are essentially the same as those identified as potential dischargers of priority pollutants by the National Resources Defense Council (NRDC) Consent Decree. Data on industrial flows was not generally available during this project.

Despite the deficiencies in the available data stored in the various files, the results of this project are considered to be significant and extremely useful and timely for the following reasons:

1. Identifiable links have been established between wastewater dischargers and major municipal water utilities.
2. Water utilities which may be impacted by potentially significant amounts of pollutants have been identified and are likely candidates for further study.
3. A Wastewater in Receiving Water (WIRW) data base system has been developed which can be updated relatively easily as more data become available and which can efficiently handle data on about 30,000 dischargers and over 1,200 water utilities.

SECTION 2

EXECUTIVE SUMMARY

The completion of this study has provided a large amount of data from which a number of interesting conclusions and insights can be drawn. The data can also be used as the basis for further analysis. However, before any additional analyses are undertaken, it is important to understand the quality of original data sources, assumptions made, and the limitations of the data. The data accuracy and completeness will not adequately support detailed or micro analysis at particular intakes For example, it should not be used for estimating the concentration of certain pollutants at the water supply intake. However, the data does provide an excellent national-level reference useful for identifying those utilities which have a high probability of being significantly impacted.

The Wastewater in Receiving Water (WIRW) data base is considered to be a first step toward the development of a capability to quickly and efficiently estimate the impact of wastewater dischargers on surface water supplies. Further work is required in the areas of:

- Water supply intake locations - latitude/longitude and/or river mile
- Water supply intake flows from each source by season
- Discharger location - latitude/longitude and/or river mile
- Discharger activities and flows by season
- Development of a hydrologic structure to "look" upstream and downstream
- Presence and concentrations of pollutants in discharges
- Fate of pollutants in the receiving waters.

Obvious comparisons can be made between levels of wastewater impact for various cities within the WIRW data base. Interpretations of these comparisons may appear contradictory, depending on how the analyst views the data. For example, Philadelphia, Pennsylvania, draws drinking water from Neshaminy Creek. About 3.8 percent of that water is wastewater during average flow conditions, and that utility serves a population of 759,000 people. On the other hand, Columbia, South Carolina, serves 228,000 people from the Saluda River which contains about 16 percent wastewater during average flow conditions. It might be concluded that Columbia is more highly impacted because of the higher percentage of wastewater. Others might see Philadelphia as more highly impacted because a greater population is affected. Other criteria such as number of dischargers, river flow, or location of intakes relative to dischargers can be used to analyze the data. One of the major purposes of the study was to develop, present and qualify data such that it could be utilized by analysts with a variety of objectives.

Columbia, South Carolina, and a number of other cities exhibit extreme low flow percent wastewater statistics. Columbia shows a figure of 350 percent wastewater during low flow conditions on the Saluda River. This implies that the city's water supply is greatly impacted. However, this may be an invalid conclusion. Unfortunately, the data source (IPWS) file did not identify seasonal changes in the water supply, or the amount withdrawn from each source. For example, Columbia has another water supply, the Broad River, which has a lower concentration of wastewater. Because of possible seasonal changes in point of withdrawal, the municipal supply may actually have a much lower percent wastewater than the 350 percent indicated. However, the figures do indicate that water quality in the Saluda River may be poor depending on the fate of the pollutants or the assimilative capacity of the river.

A percent wastewater figure greater than 100 percent may be interpreted several ways. The data presented is simply the total discharge flow estimate divided by the water supply source flow estimate. A percentage greater than 100 percent may indicate: water being used more than once, loss of water in the river due to evaporation, loss to ground or consumptive withdrawals, or inaccurate source data. It must also be understood that the percent wastewater data presented reflects the wastewater contributed only by municipal dischargers. Flow data for industrial dischargers was not included because such data was not available in source files during the course of this work. Such a file is now being developed by SCS Engineers for U.S. EPA, Monitoring and Data Support Division. This Industrial Facilities Discharge file (IFD) will be completed in early 1980 and will contain necessary point source flow and receiving water location data for inclusion in the WIRW data base.

With these qualifications in mind, the following tables present statistical summaries of the data base. Table 1 presents the distribution of population versus percent wastewater in water supply. Table 2 presents a spatial distribution by federal regions of the number of water supplies containing various percentages of wastewater in water supplies. Tables 3 and 4 present cities whose water supplies appear to be impacted significantly. Table 5 presents populations which appear to be impacted the greatest. Figure 1 presents the standard federal administrative regions.

Percent Municipal Wastewater by Population

Table 1 presents the population which utilizes surface water supplies containing various percentages of municipal wastewater. This table shows that of the persons utilizing surface water (over 62 million) most are served by supplies containing zero or low concentrations of wastewater during both average and low flow conditions. About 15 million persons are shown to be served by surface supplies containing at least 10 percent wastewater at low flow conditions and 4 million persons use municipal supplies that contain 100 percent wastewater during low flow conditions. However, as noted previously, it is unknown to what extent alternative water supplies are used during low flow conditions or to what extent supplies are combined. Therefore, the data reflect the maximum estimated impact rather than the actual estimated impact.

Percent Municipal Wastewater by Region

Table 2 presents the number of source waters in each federal region containing various percentages of municipal wastewater for average flow conditions. This table shows that for most regions, a high percentage of source waters contain zero or a small percentage of wastewater.

New England, Region I, and the Northwest, Region X, appear to have few surface water supplies containing wastewater. The low plains area, Region VII, has a greater number of wastewater impacted sources than Regions I & X; however, there appear to be a few extreme cases. The Southeast, Region IV, appears to have the highest percentage of source waters with significant percentages of wastewater, followed by the Middle Atlantic, Great Lakes, and South, Regions III and V and VI.

Cities Impacted by Greatest Numbers of Dischargers

Table 3 presents a list of twenty cities which obtain drinking water from water supplies impacted by the greatest number of dischargers. The table is organized according to the cumulative number of dischargers for each city. The cumulative number includes all dischargers from the point of abstraction to the head of the basin. Not surprisingly, this organization shows those cities near the bottom of three large river basins, the Mississippi, Ohio and Missouri, as having the

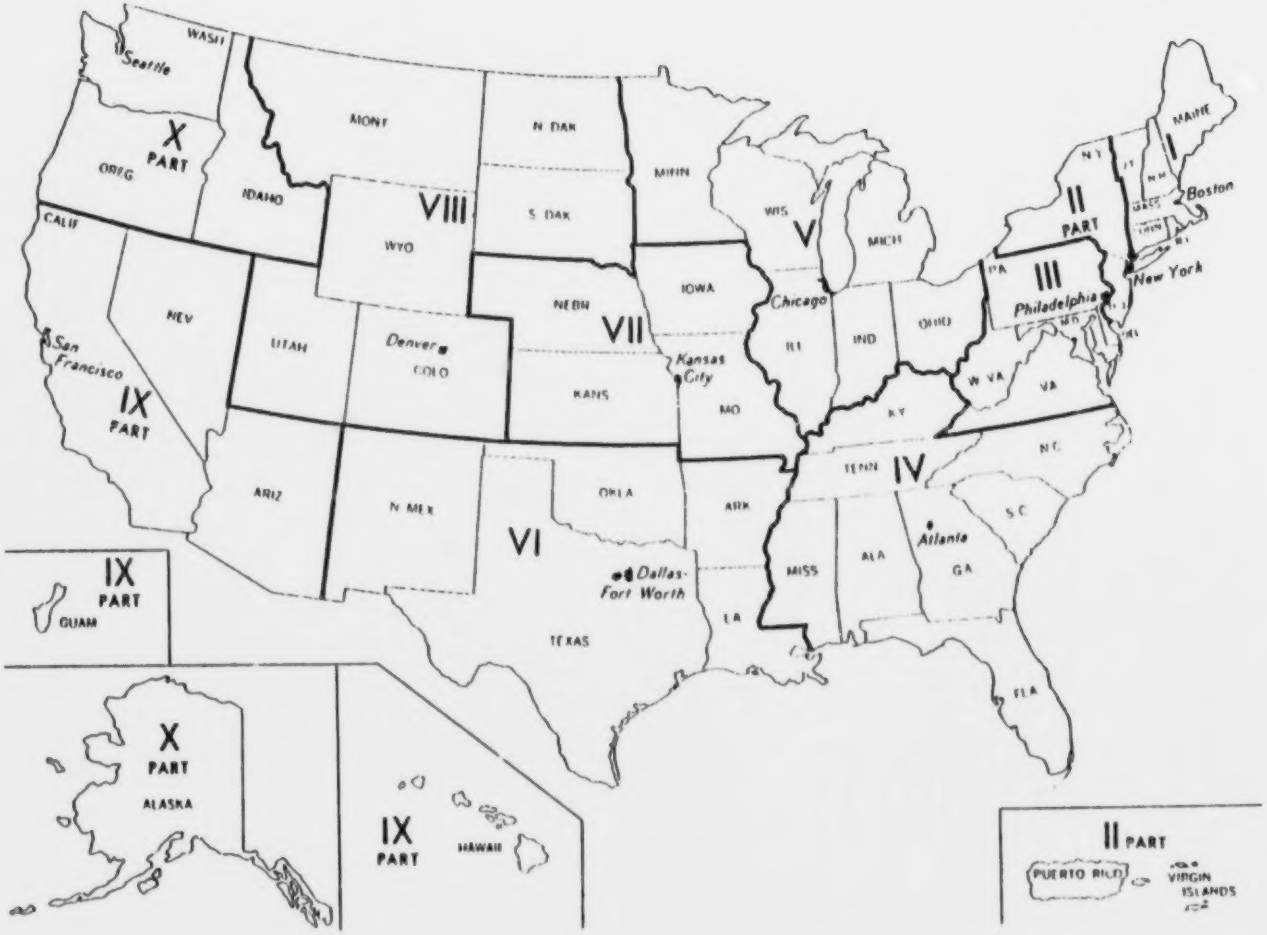
TABLE 1. DISTRIBUTION OF POPULATION BY PERCENT MUNICIPAL WASTEWATER

PERCENT WASTEWATER	POPULATION DISTRIBUTION LOW FLOW PERCENT WASTEWATERx1000	POPULATION DISTRIBUTION AVERAGE FLOW PERCENT WASTEWATERx1000
0	32174	32174
.01-.05	9144	8833
0.1-0.2	34	6646
0.21-0.5	1184	2542
0.51-1.0	462	7833
1.1-2.0	3751	10216
2.1-5.0	4639	10309
5.1-10	4429	241
11-20	9874	288
21-50	3137	
51-100	2400	64
101-200	3967	
201-500	1340	
501-1000		

TABLE 2. DISTRIBUTION OF NUMBERS OF SOURCE WATERS IMPACTED BY REGION*FOR LOW FLOW CONDITIONS

%WASTE WATER	REGION I	REGION II	REGION III	REGION IV	REGION V	REGION VI	REGION VII	REGION VIII	REGION IX	REGION X
0	119	35	87	53	23	16	4	19	37	16
0.01-0.05	4	3	33	7	6	9	2	10		4
0.1-0.2		1								
0.21-0.5			1	2			3	3	1	1
0.51-1.0	1		2	1			1		1	1
1.1-2.0		1	2	4		1		1		
2.1-5.0		1	7	12			4	1		
5.1-10	1	5	10	13	7		4		1	
11-20	1	3	15	9	8	2	8			
21-50		1	1	7	2	1	1	3	2	
51-100			6	3		1	1		1	
101-200		1	3		3	2		3		
201-500		1		1		1				
501-1000										

*See Figure 1 for location of federal regions.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GUAM
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ALASKA
IX
PART
HAWAII
II PART
PUERTO RICO
VIRGIN ISLANDS

Figure 1. Standard Federal administrative regions.

TABLE 3. SOURCE WATERS IMPACTED BY GREATEST NUMBERS OF DISCHARGERS

STATE	CITY NAME	PUB	SOURCEWATER	POPULATION X1000	CUMULATIVE			NEXT ADJACENT			% WASTEWATER	
					TOTAL # OF DISCHARGERS	MUNICIPAL	INDUSTRIAL	TOTAL # OF DISCHARGERS	MUNICIPAL	INDUSTRIAL	AVERAGE FLOW	LOW FLOW
LA	CHALMETTE	610	MISSISSIPPI R	44	20,606	7,028	13,578	1	1	0	1.8	---
LA	GRETNA	610	MISSISSIPPI R	25	20,605	7,027	13,578	26	9	17	1.8	---
LA	NEW ORLEANS	610	MISSISSIPPI R	550	20,579	7,018	13,561	6	3	3	1.8	---
LA	MARRERO	610	MISSISSIPPI R	600	20,573	7,015	13,558	14	9	5	1.8	---
LA	METAIRIE	610	MISSISSIPPI R	232	20,559	7,006	13,553	1,597	1,407	190	1.8	---
MO	CAPE GIRARDEAU	610	MISSISSIPPI R	34	9,540	3,495	6,045	1,042	275	767	2.1	9.3
KY	PADUCAH	610	OHIO R	43	8,400	1,663	6,737	143	27	116	1.0	8.6
MO	ST. LOUIS	610	MISSISSIPPI R	600	8,345	3,183	5,162	32	7	25	2.2	10
IN	EVANSVILLE	610	OHIO R	150	6,230	1,082	5,148	685	202	483	1.1	19
KY	LOUISVILLE	610	OHIO R	700	5,544	879	4,665	61	13	48	1.4	24
IN	JEFFERSONVILLE	610	OHIO R	42	5,483	866	4,617	284	80	204	1.3	24
OH	CINCINNATI	610	OHIO R	850	4,753	728	4,025	21	4	17	1.3	18
KY	FT. THOMAS	610	OHIO R	30	4,732	724	4,008	253	103	150	1.2	17
KY	FT. THOMAS	610	OHIO R	100	4,673	751	3,922	0	0	0	1.3	18
OH	PORTSMOUTH	610	OHIO R	50	4,474	621	3,853	76	12	64	1.0	7.6
KY	ASHLAND	610	OHIO R	50	4,398	609	3,789	1,108	75	1,033	1.0	7.5
MO	ST. LOUIS	610	MISSOURI R	600	4,276	1,609	2,667	693	164	529	1.3	12
IL	ALTON	610	MISSISSIPPI R	57	4,037	1,567	2,470	784	296	488	3.2	15
MO	JEFFERSON CITY	610	MISSOURI R	34	3,575	1,441	2,134	712	274	438	1.3	12
WV	HUNTINGTON	610	OHIO R	--	3,290	534	2,756	739	116	623	1.2	9.4

greatest number of dischargers contributing to their water supplies. Since many of these dischargers are hundreds or even thousands of miles away, the actual impact is not as significant as it appears.

Since large river basins also tend to have large flow volumes, the percent wastewater under average flow conditions is not large for any of the twenty cities listed. The percentage of wastewater during low flow conditions on the Ohio and upper Mississippi and Missouri appears to be significant for cities using these sources. However, this includes the flows from dischargers hundreds of miles away, and does not take into account the fate of instream degradation of pollutants. Therefore, these figures again represent maximum inputs.

The columns listed "Next Adjacent" in Table 3 show the number of dischargers between the abstraction point and the next upstream utility. For example, there are 26 dischargers between Gretna and New Orleans water intakes, a distance of less than 10 miles. The number of next adjacent dischargers to Metairie in the New Orleans area is 1,597. This indicates that 1,597 dischargers enter the Mississippi between Cape Girardeau and Metairie. This includes discharges on the Ohio below Paducah, and on the lower Arkansas and lower Red rivers. Therefore, the number of dischargers within a few hundred miles upstream from the New Orleans area is closer to 2,000 and the other 18,000 are probably too far away to have much impact except for the most conservative pollutants.

Cities Estimated to Have the Highest Percent of Municipal Wastewater

Table 4 presents 25 cities ranked according to percent municipal wastewater under annual average source water flow conditions. Included in Table 4 for reference are degraded percent wastewater estimates based on a simple nonconservative model which was used to estimate the effect of stream purification processes (see Section 6), and estimates of the number of municipal and industrial dischargers.

Certain utilities with higher estimates of percent wastewater, such as Palm Springs and Monrovia, California, were excluded from this summary because the resolution of the data sources were not considered sufficient. The reason for excluding these utilities was usually based on the fact that they were using water from small basins with small source water flows and, in this case, errors in wastewater flows or source water flows can cause significant variations in the percent wastewater estimates. These cases need to be examined in greater detail before an accurate estimate of percent wastewater can be made. Section 5 of this report includes the data on these sites as well as all of the utilities studied.

TABLE 4. SOURCE WATER IMPACT ACCORDING TO AVERAGE FLOW PERCENT WASTEWATER

State	City	Line[1]	Source Water	Population X1000	Percent Wastewater		No. of Dischargers		
					Conservative(2)	Degraded(3)	Total	Municipal	Industrial
SC	Columbia	259	Saluda R	228	16	9.8	153	52	101
MI	Ypsilanti	323	Huron R	30	13	11	38	9	29
SC	Greenwood	258	Lk Greenwood/Saluda R	29	7.7	5.4	110	33	77
CO	Pueblo	495	Arkansas R	95	7.6	5.3	74	32	42
NJ	Little Falls	055	Passaic R	333	4.9	4.1	154	44	110
ND	Millburn	054	Passaic R	234	4.8	4.2	19	9	10
CO	Thornton	335	Clear Ck	60	4.5	4.2	63	12	51
IN	Indianapolis	464	White R	680	4.3	3.0	102	33	69
NJ	Elizabeth	166	Del-Raritan CA	500	4.3	3.9	17	5	12
NJ	Princeton	162	Del-Raritan CA	25	4.3	3.9	17	5	12
PA	Bryn Mawr/Philadelphia	149	Neshaminy Ck	820	3.8	3.5	30	9	21
PA	Middletown/Philadelphia	140	Neshaminy Ck	759	3.8	3.5	30	9	21
AL	Langdale	235	Chattahoochee R	25	3.8	2.3	39	21	18
AL	Birmingham	207	Cabaha R	650	3.6	3.4	19	5	14
GA	La Grange	234	Chattahoochee R	32	3.6	2.2	28	16	12
PA	Philadelphia	155	Schuylkill R	1950	3.5	2.5	240	65	175
TX	Ingleside	551	Nueces R	30	3.5	3.2	19	19	0
WI	Oshkosh/Appleton	273/274	Lk Winnebago	53	3.3	2.4	174	45	129
GA/AL	Columbus/Phenix City	237/236	Lk Oliver	134/28	3.2	1.5	42	0	42
CO	Westminster	334	Clear Ck	35	3.2	3.0	54	14	40
IL	Alton	380	Mississippi R	57	3.2	.22	4037	296	3741
TX	Dallas	539	Lk Ray Hubbard	878	2.8	2.7	12	4	8
OH	Bowling Green	327	Maumee R	26	2.8	1.6	380	139	241
CO	Englewood	339	S. Platte R	36	2.6	2.4	31	6	25
SC	Lancaster	267	Catawba R	25	2.3	1.5	169	17	152

1) Line number refers to Table 10, Section 5.
2) Cumulative percent wastewater estimates under average source water flow conditions.
3) Cumulative percent wastewater estimates using exponential degradation model.

The degraded pollutant estimates show some decrease from the conservative estimates. In one case--Alton, Illinois--it appears that most of the wastewater is discharged some distance upstream, since the nonconservative estimate (.22%) is considerably less than the conservative estimate (3.2%).

It is recommended that the sources of water listed in Table 4 be considered as a "shopping list" of supplies to be investigated in more detail regarding the extent of wastewater pollutants present rather than as a verified list of sources with the greatest wastewater impacts. This recommendation is based on the degree of data resolution, lack of industrial flow data, and the fact that many of these cities use more than one water source. For example, Columbia, SC, uses three water sources in addition to the Saluda River, and Ypsilanti uses eight wells in addition to the Huron River.

Cities Estimated to Have the Highest Municipal Wastewater Loading

Another method of presenting impact is in terms of mass loading of pollutants on the population served. Assuming that the population for each city uses or is exposed to the same average flow of water per capita, then the mass loading of pollutants on the population (based on the quality of the source water at the intake point) is proportional to the population times the percent wastewater in the water supply.

Table 5 presents a list of twenty-five population centers which are estimated to have the greatest loading or exposure to municipal wastewater in drinking water supplies. The cities are ranked according to the product of population and the conservative estimate of percent wastewater at annual average flow conditions. The degraded estimate averages 46 percent less than the conservative estimates. It should be noted that the degree of water treatment varies at each site and would have a significant effect on the quality of water reaching the user. This fact was not addressed in preparing Table 5.

Summary

The Wastewater in Receiving Water (WIRW) data base is a tool which can support many types of analysis. Several of the uses have been indicated in this conclusion, others are presented in the body of the report. However, it is important to stress here that this data base provides a significant framework never before assembled, for further data additions and practical use even in this embryonic stage. Never before has so much data on the relation between wastewater discharges and drinking water been assembled in such a comprehensive and useful form. Collecting data on 540 utilities across the nation has been a formidable task. However, now that the framework has been established,

TABLE 5. SOURCE WATER IMPACT ACCORDING TO POPULATION AND PERCENT WASTEWATER

State	City	Line(1)	Source Water	Pop X1000	Percent Wastewater	
					Conservative(2)	Degraded(3)
PA	Philadelphia	155	Schuylkill R	1,950	3.5	2.5
SC	Columbia	259	Saluda R	228	16	9.8
PA	Bryn Mawr	149	Neshaminy Ck	820	3.8	3.5
IN	Indianapolis	464	White R	680	4.3	3.0
PA	Middletown	140	Neshaminy Ck	759	3.8	3.5
TX	Dallas	539	Lk Ray Hubbard	878	2.8	2.7
AL	Birmingham	207	Cabaha R	650	3.6	3.4
NJ	Elizabeth	166	Delaware-Raritan CA	500	4.3	3.9
MD	Baltimore	124	Susquehanna R	1,755	1.2	0.57
NJ	Little Falls	055	Passaic R	333	4.9	4.1
MO	St. Louis	381	Mississippi R	600	2.2	0.13
LA	New Orleans	525	Mississippi R	550	1.8	0.017
NJ	Millburn	054	Passaic R	234	4.8	4.2
OH	Cincinnati	447	Ohio R	850	1.3	0.20
LA	Marrero	524	Mississippi R	600	1.8	0.018
MD	Hyattsville/Wash DC	178	Potomac R	1,300	0.8	0.39
KY	Louisville	454	Ohio R	700	1.4	0.26
MO	Kansas City	359	Missouri R	750	1.2	0.22
TX	Fort Worth	538	Ben Brook Lk	490	1.6	1.4
MO	St. Louis	362	Missouri R	600	1.3	.04
CO	Pueblo	495	Arkansas R	95	7.6	5.3
SC	Rock Hill	266	Catawba R	426	1.4	0.71
NJ	Elizabeth	167	Raritan & Millstone	500	1.1	.95
IL	East St. Louis	382	Mississippi R	215	2.2	0.13
GA	Columbus	237	Lk Oliver	134	3.2	1.5

1) Line number refers to Table 10, Section 5.
2) Cumulative percent wastewater estimates under annual average source water flow conditions.
3) Cumulative percent wastewater estimates using exponential degradation model.

building upon this data base and discovering new ways to use this information will further accentuate the value of this final product.

SECTION 3

RECOMMENDATIONS

It is recommended that this study be updated in about a year. At that time additional relevant data on municipal and industrial discharges and stream flows currently being developed will be available. The update will be relatively efficient because of the availability of the WIRW system developed for this project.

There are several ongoing EPA projects which will facilitate updating and expanding the files of data on the wastewater discharges to water supplies. Some of the most important are:

1. EPA, Monitoring and Data Support Division - Industrial Facility Discharge File (IFD) - will provide data on municipal and industrial discharge locations, flows and activities (SIC codes). Complete by March 1980. Contract 68-01-4872. Phillip Taylor, Project Officer.

2. EPA, Monitoring and Data Support Division - Hydrologic Digital File (Reach File) project - will provide data on hydrologic structure and stream flows. Complete November 1979. Contract 68-01-4679. Phillip Taylor, Project Officer.

3. EPA, Effluent Guidelines Division - Development of screening data on priority pollutants in municipal and industrial effluents. Some data available on most discharger categories, will improve as more data collected. Washington, D.C.

4. EPA, Enforcement Division - Permit Compliance System Modification - PCS file will be modified to include discharge permit limitations for all major dischargers. Complete by April 1980. Contract 68-03-2578. William Milligan, Project Officer.

5. EPA, Monitoring and Data Support Division - Priority Pollutant Fate - will provide data on physical properties of priority pollutants to estimate degradation rates and fates. Complete November 1979. Michael Callihan, Project Officer.

6. EPA, Criteria and Standards Division - Proposed Ambient Water Quality Criteria - will provide water quality criteria

for priority pollutants based on aquatic toxicity and human health effects. Draft criteria available. Washington, D.C.

An approach which could be used is as follows:

1. Update the WIRW data base using discharge locations and flow data from the IFD file.

2. Update the WIRW data base using hydrologic structure and stream flows from Reach file.

3. Add pollutant limitations to WIRW data base using limitation data from modified PCS file.

4. Operate the WIRW to produce estimates of mass loadings of pollutants.

5. Modify mass loadings derived from step 4 by fate data to estimate instream concentrations due to upstream discharges.

6. Compare instream concentrations to criteria established to determine high impact areas.

7. Use WIRW system to determine causes of high impact.

This procedure, which can be efficiently started in about six months, should provide more information on which to base decisions regarding relations between dischargers and water supply systems.

SECTION 4

APPROACH

A systems methodology was used to integrate and implement the basic logical approach. The primary tool developed and used was the Wastewater in Receiving Water (WIRW) system. The main component of the WIRW system was the WIRW Data Base. A computer data base was developed because of the considerable quantity of data handling and analysis required. This approach allowed the efficient use of existing data files in digital media and centralized all data to compute wastewater loadings and percent in receiving waters. Building a data base also made it possible to:

- Evaluate existing data and check for obvious errors
- Fill in gaps with manually retrieved data where necessary
- Allow for error correction by providing edit capability
- Allow for an automated data base update as better information sources become available
- Allow for an automated data base update as changes occur in the natural environment.

The latter two points are probably of the greatest significance. Often studies are done which require extensive data collection and analysis, but which are done on an entirely manual basis. As better data becomes available, or when changes occur in the natural environment due to increased numbers of dischargers, increases or decreases in discharge flows, changes in composition of industry groups, etc., each change or update would affect several outputs and each would have to be dealt with separately. On the other hand, a centralized data base with update and retrieval software allows relatively quick recalculations using the new information. For example, frequently, during the course of the study, problems or gaps in the data were discovered. Many of these were corrected or filled in, improving project results.

Identify Utilities and Source Waters

The primary data source was the Inventory of Public Water

Supplies file, which is a collection survey data gathered by the Office of Water Supply (now the Office of Drinking Water Supply), of the U.S. Environmental Protection Agency, on almost 47,000 public water utilities in the United States. Of these utilities, 540 were found which utilize surface water sources and serve a population of 25,000 of more. The rest utilize ground or purchased water sources or serve populations of less than 25,000. These 540 utilities formed the nucleus of the WIRW System data base.

Unfortunately, the IPWS file contains some inaccuracies and data deficiencies. Among these are:

- Some source waters are incorrectly named or not identified.
- Some cities and/or utilities are not linked to a source water.
- Many latitudes and longitudes for the abstraction points were incorrect or unidentified.
- Source water types, either groundwater or surface water, were sometimes not identified or labeled incorrectly.
- Duplication of utilities and source waters for some cities exists.

Some obvious IPWS deficiencies were corrected; however, a complete effort was not possible within project resources. Although there are problems associated with the IPWS file, it is considered the most complete data base available.

The location of surface water intakes was obtained from the latitude/longitude data provided by the IPWS file, or where this was lacking, by making certain assumptions. For lakes, reservoirs, and other impoundments, the point of intake was assumed to be as "downstream" as possible or as close to the utility by straight line distance if the impoundment was unusually large. For many utilities, a small feeder creek may have been indicated which gave a more exact intake location. For other rivers and streams, a simple shortest straight line distance assumption was used. Many utilities that had large pumping requirements actually had a separate public water entity with a different IPWS identification code for these pumping stations. This enabled a more accurate determination of the intake location. However, the pumping stations were deleted as separate utility entities and combined with the main public water utility. This accounted for several of the original utilities being dropped from the data base.

Once the utilities and source waters were identified and located, a schematic drawing was developed for each utility basin (see Figure 2 for hypothetical basin).

Not only was a graphic representation helpful in illustrating the downstream progression of wastewater from utility to utility, but a numerically coded representation was also used to enable computer analysis. The computer cannot "see" that one utility is downstream of another, but if each utility contains pointer fields which identify the name of the upstream and downstream utility, then the computer can successively "find" these utilities by accessing index lists which say where in the data base they reside. The naming scheme utilized the IPWS identification code, a 14-digit number, to identify the name of each utility.

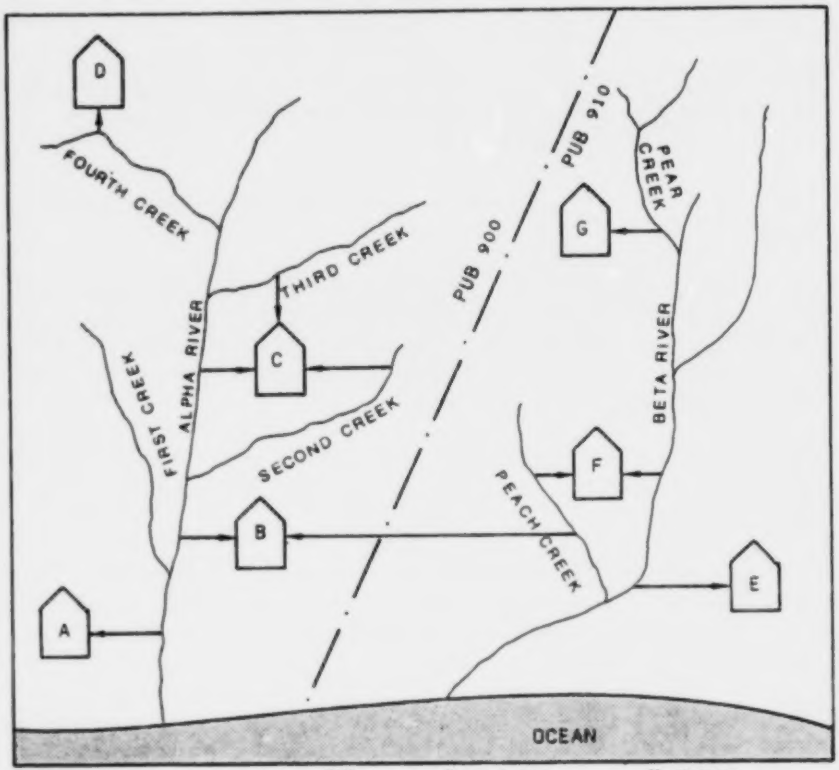
This numerical linking of upstream and downstream utilities was an extensive and critical task. It provides the spatial hydrologic framework for the entire study. Not only was it necessary to construct this hydrologic structure of public water utilities, but it was also necessary to organize all the surface water sources identified in this study within the United States into hydrologic systems called Public Utility Basins (PUB).

Public Utility Basins were defined as the entire drainage area upstream from a terminal point at an ocean or sink. The purpose of this definition was to provide routing of wastewater to a terminus. The Mississippi PUB therefore consisted of all the area draining into the terminal point at the gulf.

A list of all PUBs defined for this study may be found in Appendix A. The numbering of the PUBs is arbitrary and has no inherent significance. PUB number 777 is reserved for source waters which could not be found on any maps.

Identify Upstream Dischargers

Once the public water utilities and their source waters were mapped and linked, assignment of waste dischargers was made. The primary source of data for municipal and industrial dischargers used is an EPA computer file called the Permit Compliance System (PCS). This file contains about 60,000 NPDES (National Pollutant Discharge Elimination System) permits and includes all known permitted dischargers in the U.S., as of 1977. Each wastewater discharger in this file is classified according to SIC code, and approximate plant location (state, city and county). Receiving water name or detailed discharge location is not provided for on this file. The task of locating the dischargers on the USGS hydrologic maps and linking them to water supplies was time consuming, and the accuracy was restricted by the lack of knowledge concerning exact discharge


D
FOURTH CREEK
THIRD CREEK
ALPHA RIVER
FIRST CREEK
C
SECOND CREEK
B
A
PUB 900
PUB 910
PEAR CREEK
G
BETA RIVER
F
PEACH CREEK
E
OCEAN

Utility	Source Water	PUB Code	Downstream Utility Pointer	Upstream Utility Pointer
A	Alpha River	900	None	B
B	Alpha River	900	A	C
	Peach Creek	910	None	F
C	Alpha River	900	B	D
	Second Creek	900	B	None
	Third Creek	900	B	None
D	Fourth Creek	900	C	None
E	Beta River	910	None	F
F	Beta River	910	E	G
	Peach Creek	910	B	None
G	Pear Creek	910	F	None

Figure 2. Hydrologic link structure of upstream and downstream utilities.

locations. The approach used was as follows:

- Determine the drainage basin of the source water for the utility in question.
- Identify dischargers from PCS file.
- Sort dischargers by state and county and locate manually on the same hydrologic maps used to identify water utilities.
- Verify that dischargers are upstream of water supply.

There were a number of problems in determining the correct structure relation between wastewater discharges and water supplies due to the general lack of precise data on discharge and intake location. Certain assumptions were often made to resolve this problem as follows:

1. If the abstraction point for a city/utility is unknown, then the abstraction point is generally assumed to be at or near the upstream city limits.
2. If a reservoir appears on a map, in or near the city and is on the city/utilities source water, and the abstraction point is unknown, then the abstraction point is assumed to be from the reservoir.
3. If the abstraction point for a city/utility is unknown, and/or there are multiple intakes on the same source water, then the intakes are treated as one.
4. Identified industrial and municipal dischargers within the city limits are assumed to discharge downstream of the water supply intake.
5. A city/utility which abstracts from a reservoir is assumed to have its intake at the upstream city limits and consequently is not affected by downstream discharges.
6. If receiving water for a discharger is unknown, then discharge is assumed to be into the nearest body of water.

Discharger Flow and BOD Loadings

Data on municipal flows and treatment type were obtained from the NEEDS and Municipal Waste Facilities Inventory (MWFI) files. Flow data were not always available, but were estimated from population for about 17 percent of the municipal dischargers. The estimate used for these cases was 100 gallons per day per person.

BOD loadings were assumed to be the same for facilities with the same treatment (primary, secondary, tertiary). The errors caused by making this assumption were not considered serious since the wastewater in receiving water calculations aggregate data from several upstream dischargers.

Data on industrial discharge flows was not available during this project. Therefore, industrial dischargers were classified and aggregated by number according to SIC code.

Industrial dischargers were divided into 28 groups based on the Standard Industrial Classification (SIC) code. Table 6 defines the SIC codes included in each of the 28 groups. Those groups marked with an asterisk include industries identified in the EPA-NRDC consent decree. Thus, each group indicated by asterisk contains an industry involved in the discharge of one or more of the 129 priority pollutants defined by the consent decree.

It should be noted that municipal dischargers are included in Group 27 because they are included in SIC 4952 classifications. Therefore, tables in this report showing industrial discharge totals represent totals for all dischargers, municipal and industrial. Group 27 contains municipal dischargers (4952) as well as others included in the Public Utilities (4941-4953) classification. The total number of industrial dischargers without municipals can be obtained by subtracting the number of municipals which have been separated for more detailed analysis.

Source Water Flow Estimation

The USGS National Water Data Exchange (NAWDEX) system was used to locate gauging stations on the source waters of interest. The resulting listings of gauging stations for each source water were then manually sorted to identify stations with sufficient flow data which were considered to best represent the flow at each utility abstraction point.

The NAWDEX system is an index to water data which contains reference to data from several hundred sources. The resources available for this project necessitated the use of computerized flow data whenever possible. The USGS Water Storage and Retrieval (WATSTORE) system is the main source of computerized flow data in the NAWDEX index. Thus, gauging stations in the WATSTORE system were used to determine the annual average and 7-day, 10-year low flow for approximately 95 percent of all abstraction points. Approximately 5 percent of the required

TABLE 6. SIC CODE GROUPINGS
(IN SEQUENTIAL SIC CODE ORDER)*

SIC Group	SIC Codes	SIC Group Description
1 *	1000-1099	Ore Mining and Dressing
2 *	1100-1399	Coal Mining, Oil & Gas Extraction
1	1400-1499	(Ore Mining)
-	1500-2009	No Group
3	2010-2019	Meat Processing
4	2020-2029	Dairy
5	2030-2039	Fruits and Vegetables
6	2040-2049	Grain Mills
7	2050-2099	Miscellaneous Foods
8	2100-2199	Tobacco
9 *	2200-2399	Textile Mills
10 *	2400-2499	Timber Products Processing
11	2500-2599	Furniture and Fixtures
12 *	2600-2699	Pulp and Paperboard Mills and Converted Paper Products
13 *	2700-2781	Paint & Ink Formulation and Printing
(12)*	2782	(Pulp & Paper)
(13)*	2783-2799	(Paint & Ink)
14	2800-2811	Miscellaneous Chemicals
15 *	2812-2813	Inorganic Chemicals Manufacturing
(14)	2814-2815	(Miscellaneous Chemicals)
(15)*	2816	(Inorganic Chemicals)
(14)	2817-2818	(Miscellaneous Chemicals)
(15)*	2819	(Inorganic Chemicals)
(14)	2820	(Miscellaneous Chemicals)
16 *	2821-2824	Plastic & Synthetic Materials Mfg.
(14)*	2825-2840	(Miscellaneous Chemicals)
17 *	2841	Soap and Detergent Manufacturing
(14)	2842-2850	(Miscellaneous Chemicals)
(13)*	2851	(Paint & Ink)
(14)*	2852-2864	(Miscellaneous Chemicals)
18 *	2865	Organic Chemicals Manufacturing
(14)	2866-2868	(Miscellaneous Chemicals)
(18)*	2869	(Organic Chemicals)
(14)	2870-2890	(Miscellaneous Chemicals)
19 *	2891	Rubber Processing
(14)*	2892	(Miscellaneous Chemicals)
(13)*	2893	(Paint & Ink)

(continued)

TABLE 6. (continued)

SIC Group	SIC Codes	SIC Group Description
(14)*	2894-2899	(Miscellaneous Chemicals)
-	2900-2910	No Group
20 *	2911	Petroleum Refining
-	2912-2950	No Group
21 *	2951-2952	Paving and Roofing Materials
-	2953-2989	No Group
(20)*	2990-2999	(Petroleum Refining)
(19)*	3000-3099	(Rubber Processing)
22 *	3100-3199	Leather Tanning and Finishing
23	3200-3299	Glass, Stone and Clay
-	3300-3311	No Group
24 *	3312-3313	Iron and Steel Manufacturing
-	3314	No Group
24 *	3315-3317	(Iron and Steel)
-	3318-3320	No Group
25 *	3321-3322	Machinery and Mechanical Products
-	3323	No Group
(25)*	3324-3325	(Machinery)
-	3326-3330	No Group
26 *	3331-3334	Non-Ferrous Metals Manufacturing
-	3335-3338	No Group
(26)*	3339	(Non-Ferrous Metals)
-	3340	No Group
(26)*	3341	(Non-Ferrous Metals)
-	3342-3350	No Group
(25)*	3351	(Machinery)
-	3352	No Group
(25)*	3353-3999	(Machinery)
-	4000-4940	No Group
27 *	4941	Public Utilities
-	4942-4951	No Group
(27)	4952-4953	(Public Utilities)
28 *	4954-9999	Other

NOTE: Items enclosed in parentheses are additional occurrences of the same SIC group.

* SIC codes in this group include those on priority pollution list.

flow data was obtained from the Army Corps of Engineers. This data in published form is available for major rivers such as the Ohio, Mississippi, etc., and was utilized when WATSTORE data was unavailable.

Although WATSTORE provided the best available data, it also had its limitations. Among these were:

- Occasionally, gauging stations did not have flow data reported as being available.
- Gauging stations did not always have a sufficient data base to permit calculation of 7-day, 10-year low flow values.
- Stations on rivers dividing states were at times difficult to locate.

Lakes were assigned a flow by using a model that represents them as wide places in a river. An average flow through the lake was then obtained by using available data on volumes and retention times.

The Great Lakes basin was another special case. It was considered that calculating the percent wastewater for an entire Great Lake would be misleading and would not take into account local mixing and current flow. Therefore, the dischargers into the Great Lakes were not identified, since the resources to do this would not result in a productive output at this time.

Develop Wastewater in Receiving Water System

The Wastewater in Receiving Water (WIRW) system consists of two main parts: the data base and the data processor. The system was developed in four stages. First, primary data examination programs were developed to examine and select data from machine readable files of interest. This included the EPA IPWS, PCS, NEEDS, MWFI and City Master files. Second, a skeleton data base was created which defined the overall structure. A hierarchical file and record structure was selected which simulated the natural structure as shown by Figure 3. The data base was initialized by entering from the IPWS file the universe of service areas, utilities and source waters to be studied. Third, a Data Input/Edit/Update subsystem was developed to allow data entry from other files and from manual sources, as well as correction or modification of previously entered data. Fourth, data retrieval, analysis and report writing capabilities were developed.

The WIRW system software consists of over 40 program modules written in COBOL for an IBM 370 environment. File organization is IBM Indexed Sequential utilizing both QISAM and BISAM access methods. There are two physical ISAM files, as shown by Figure 4. WIRW-DB is the master data base containing city records, utility records, and source water records. The WIRW-DDB file contains all the discharger records. Keys in the master WIRW-DB file for each source water record point to the appropriate block or records in the WIRW-DDB file which are all the next adjacent dischargers between that source water intake point and any upstream utilities. Because the nature of data at the discharger level is most subject to change and the most volatile, it was felt that by maintaining a separate physical file, the change activity for the WIRW data base as a whole could be minimized. From a technical standpoint, it also minimizes the disk storage space necessary and is particularly fast at inquiries of selected portions of the data base. Most inquiries of the entire data base can be accomplished by treating the files in a simple sequential access mode. It also allows for simple analyses of discharger characteristics independent of the complex data base structure as a whole, and facilitates rapid updating of discharger data.

Figure 5 presents a flow diagram of how the primary data sources relate to the data base. Data on stream flow, upstream and downstream utilities and upstream next adjacent dischargers were entered using a preprinted form (see Figure 6 for example) driven by the skeleton data base. A data entry form was preprinted for each source water supplying a utility serving over 25,000 people.

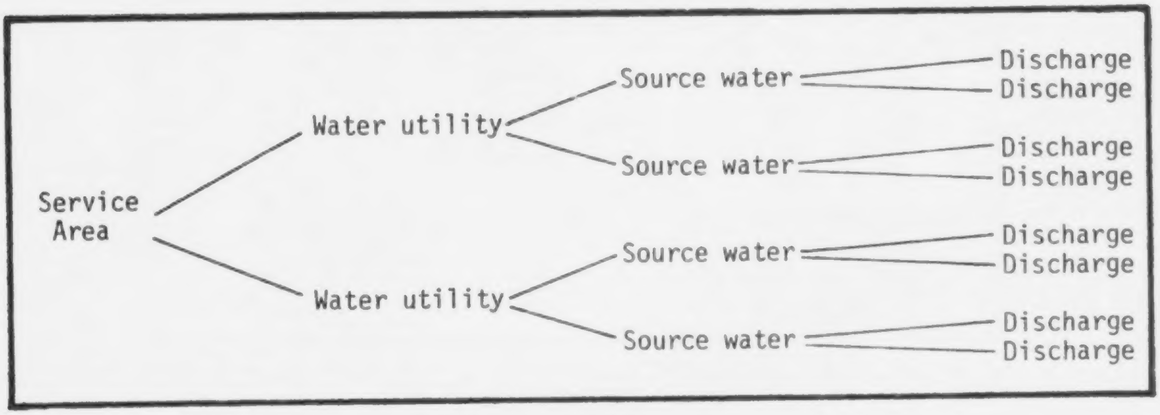

Service Area
Water utility
Source water
Discharge
Discharge
Source water
Discharge
Discharge
Water utility
Source water
Discharge
Discharge
Source water
Discharge
Discharge

Figure 3. WIRW logical file and record structure.

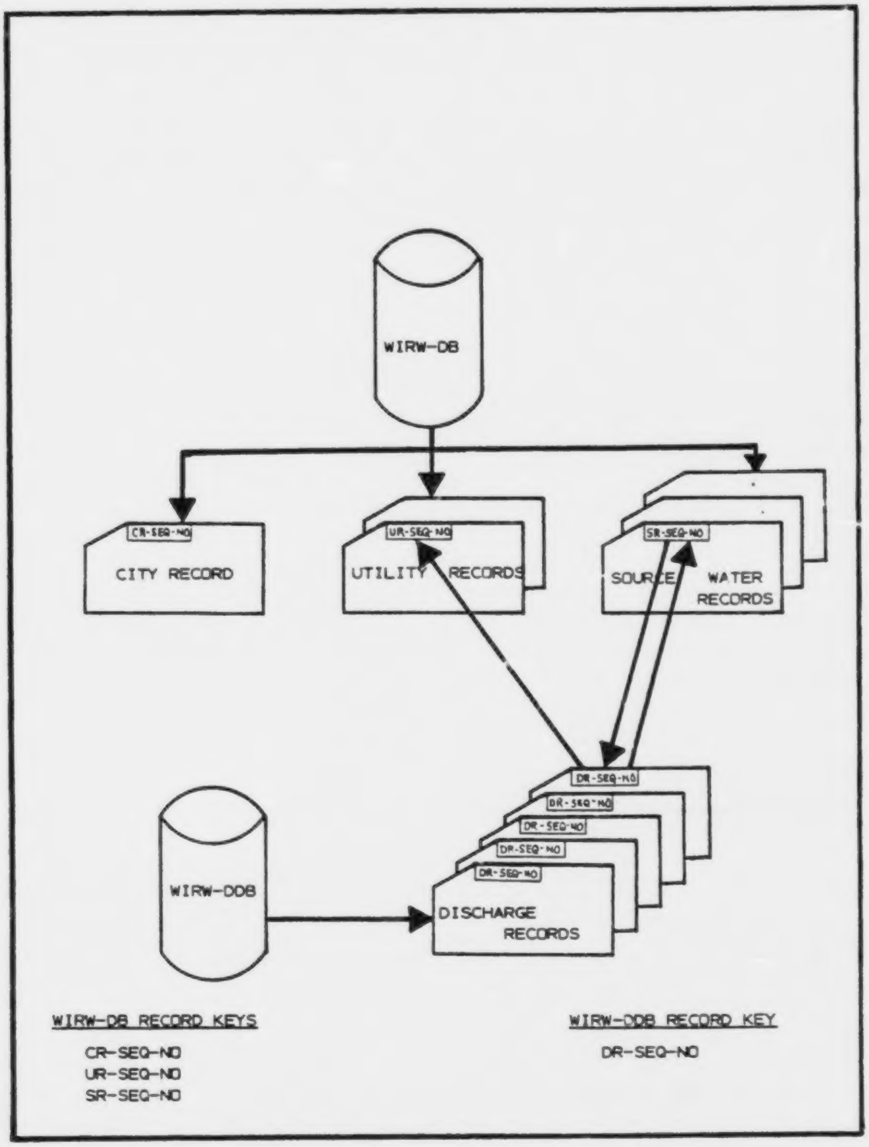
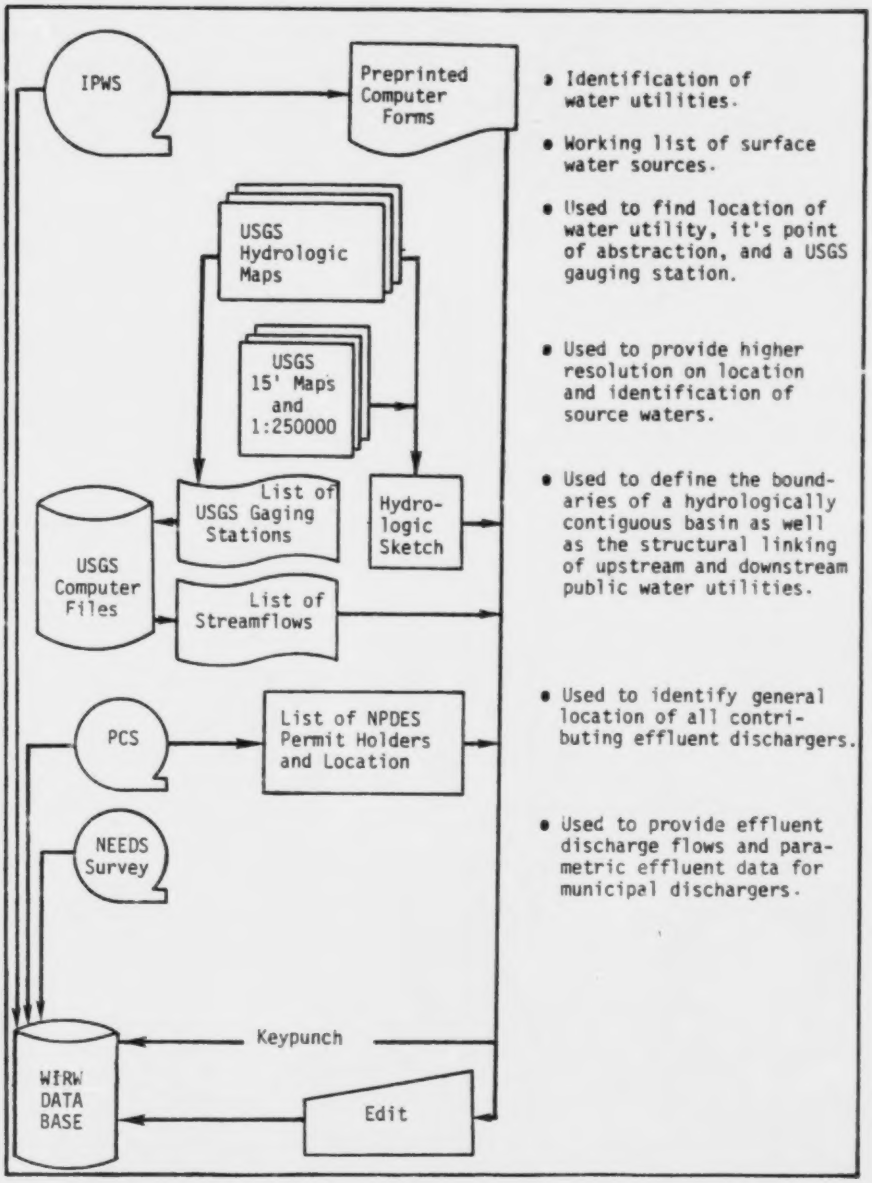

WIRW-DB
CR-SEQ-NO
CITY RECORD
UR-SEQ-NO
UTILITY RECORDS
SR-SEQ-NO
SOURCE WATER RECORDS
DR-SEQ-NO
DR-SEQ-NO
DR-SEQ-NO
DR-SEQ-NO
DR-SEQ-NO
WIRW-DDB
DISCHARGE RECORDS
WIRW-DB RECORD KEYS
CR-SEQ-NO
UR-SEQ-NO
SR-SEQ-NO
WIRW-DDB RECORD KEY
DR-SEQ-NO

Figure 4. Dual physical file structure.


IPWS
Preprinted Computer Forms
USGS Hydrologic Maps
USGS 15' Maps and 1:250000
List of USGS Gaging Stations
Hydro-logic Sketch
USGS Computer Files
List of Streamflows
PCS
List of NPDES Permit Holders and Location
NEEDS Survey
Keypunch
WIRW DATA BASE
Edit

- Identification of water utilities.
- Working list of surface water sources.
- Used to find location of water utility, it's point of abstraction, and a USGS gauging station.
- Used to provide higher resolution on location and identification of source waters.
- Used to define the boundaries of a hydrologically contiguous basin as well as the structural linking of upstream and downstream public water utilities.
- Used to identify general location of all contributing effluent dischargers.
- Used to provide effluent discharge flows and parametric effluent data for municipal dischargers.

Figure 5. Data collection and assembly flow for WIRW.

```
CITY/MUNICIPALITY RECORD LEVEL
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
(STATE)  (NAME OF CITY)                (NAME OF COUNTY)

   CA    HAYWARD

         UTILITY RECORD LEVEL
         - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
         (NAME OF UTILITY)                 (ADDRESS OF UTILITY)        (UTILITY ID)       (RECORD CODE)

         SAN GABRIEL VALLEY WTR CO  36041   PO BOX 967                  06000000000706      000086

            SOURCE WATER RECORD LEVEL
            - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
            (SOURCE WATER NAME)       (RECORD CODE)     (SOURCE WATER TYPE)       (SR-ZERO-INDICATOR)
                                                         0=UNKNOWN,1=RIVER,        1=DISCHARGE PRESENT,
                                                         2=STREAM,3=RESERVOIR,     2=0% WASTEWATER,
                                                         4=LAKE                    9=NO FLOW DATA AVAILABLE
             RLYTLE CREEK              000087            -                         -
             (USGS STATION NUMBER)   (RIVER BASIN MAJOR)    (RIVER BASIN MINOR)   (LATITUDE)   (LONGITUDE)
             - - - - - - - - - -          00                    00                 000000       0000000
             (SR-INTERSTATE-INDICATOR)  (SR-DATA-SOURCE-QUANTITY)  (SR-DATA-SOURCE-QUALITY)  (PUBLIC UTILITY BASIN)
              0=UNKNOWN,                 0=UNKNOWN,                 SAME CODE AS SOURCE
              1=INTERSTATE STREAM,       1=USGS-WATSTORE,           QUANTITY
              2=INTRASTATE STREAM        2=USGS-RECORDS,
                                         3=ARMY CORPS, 4=NOAA
             -                          -                          -                          - - -

             (AVERAGE FLOW, CFS)        (LOW FLOW, CFS)
             - - - - - - -              - - - - - -
             (DOWNSTREAM UTILITY ID)       (UPSTREAM UTILITY IDS)

             - - - - - - - - - - - - - -   - - - - - - - - - - - - - -   - - - - - - - - - - - - - -
                                           - - - - - - - - - - - - - -   - - - - - - - - - - - - - -
                                           - - - - - - - - - - - - - -   - - - - - - - - - - - - - -
              DISCHARGE RECORD LEVEL
              - - - - - - - - - - - -
              - - - - - - - - - -   - - - - - - - - - -   - - - - - - - - - -   - - - - - - - - - -
              - - - - - - - - - -   - - - - - - - - - -   - - - - - - - - - -   - - - - - - - - - -
              - - - - - - - - - -   - - - - - - - - - -   - - - - - - - - - -   - - - - - - - - - -
              - - - - - - - - - -   - - - - - - - - - -   - - - - - - - - - -   - - - - - - - - - -
              - - - - - - - - - -   - - - - - - - - - -   - - - - - - - - - -   - - - - - - - - - -
```

Figure 6. WIRW data entry form.

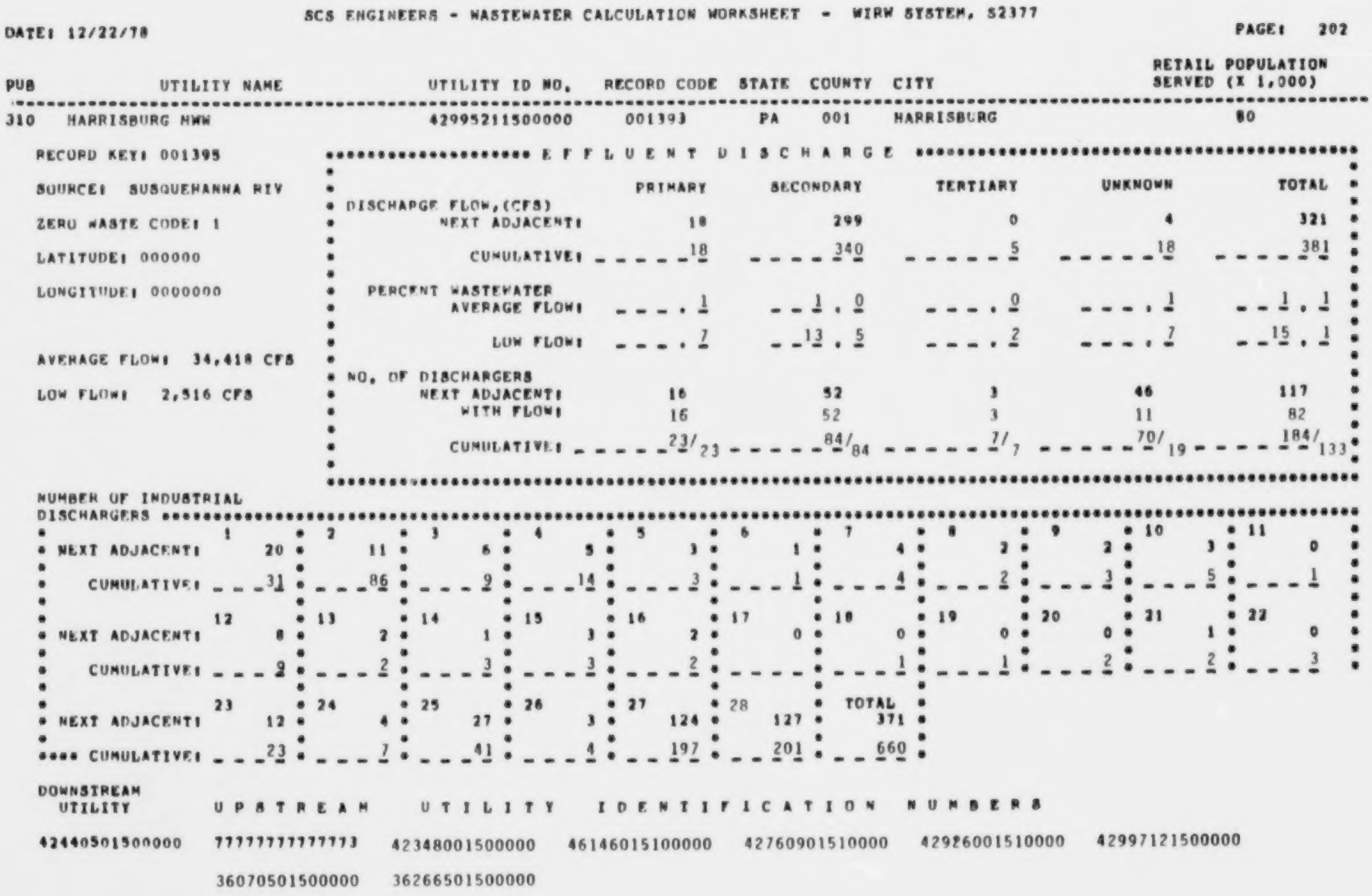
Three levels of data were preprinted, each corresponding to a record type in the data base. At the top of each form is a printout of the state, name of city and county (when available) that the public utility served. The utility name, address, IPWS number or utility ID was printed at the second level. The third level printed was the name of the source water utilized by that utility and USGS river basin when available. The third level data elements with underscores such as source water type or USGS gauging station number used to derive stream flow were filled in by data researchers directly on the forms. Any of the preprinted data determined to be in error could be crossed out and the correct data written in above it. In this way, all data collected concerning closest USGS gauging station, average and low stream flow, PUB identification, locations of the source of the data found, upstream and downstream utility identification pointers, and next adjacent discharger NPDES numbers were entered onto one form and then keyed into machine readable form and entered into the WIRW data base.

Wastewater In Drinking Water Calculations

Two basic tools were used to estimate the number of dischargers and the percent municipal wastewater flow impacting drinking water supplies. The first was an index for each utility basin (PUB) showing the hydrologic structure of all the utility intakes, that is, the upstream/downstream order of the intakes. The second was a computer generated worksheet which accumulated the number and wastewater flow from municipal dischargers and the number of industrial dischargers between a utility and the next upstream utility (the next adjacent dischargers). The overall totals were accumulated manually in downstream order with the results being entered on the worksheets.

Figure 7 presents the worksheet for the city of Harrisburg, Susquehanna River source as an example. All available information in the data base on the city, utility and source water is printed on the worksheet for information purposes. All available information in the data base on the next adjacent wastewater flows and on the number of municipal dischargers is printed inside the box on the top half of the sheet. Also, the number of next adjacent industrial dischargers organized by SIC group is printed inside the box on the lower half of the sheet.

The cumulative municipal flow for this example is determined by adding the cumulative totals for each of the upstream utilities listed at the bottom of the sheet by identification number. For this case there were several adjacent upstream utilities which needed to be examined. However, most of the wastewater was being discharged between Harrisburg and the next upstream utilities since the total cumulative flow is 381 cfs while the next adjacent flow is 321 cfs. In terms of the total



```
                              SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, S2377
DATE: 12/22/78                                                                                                    PAGE:   202

                                                                                                         RETAIL POPULATION
PUB            UTILITY NAME              UTILITY ID NO.   RECORD CODE  STATE  COUNTY  CITY               SERVED (X 1,000)
--------------------------------------------------------------------------------------------------------------------------
310   HARRISBURG MWW                     42995211500000     001393       PA     001    HARRISBURG                80

   RECORD KEY: 001395         ******************* E F F L U E N T   D I S C H A R G E ***************************************
                              *
   SOURCE:  SUSQUEHANNA RIV   *                            PRIMARY       SECONDARY        TERTIARY        UNKNOWN          TOTAL *
                              * DISCHARGE FLOW,(CFS)                                                                             *
   ZERO WASTE CODE: 1         *             NEXT ADJACENT:      18             299               0              4            321 *
                              *                                                                                                  *
   LATITUDE: 000000           *                CUMULATIVE: _ _ _ _ _18   _ _ _ _ _340   _ _ _ _ _ _5   _ _ _ _ _ _18   _ _ _ _ _ _381 *
                              *                                                                                                  *
   LONGITUDE: 0000000         *   PERCENT WASTEWATER                                                                             *
                              *             AVERAGE FLOW:  _ _ _ . 1     _ _1 . 0       _ _ _ . 0      _ _ _ . 1       _ _1 . 1   *
                              *                                                                                                  *
                              *                 LOW FLOW:  _ _ _ . 7     _ _13 . 5      _ _ _ . 2      _ _ _ . 7       _ _15 . 1  *
   AVERAGE FLOW:  34,418 CFS  *                                                                                                  *
                              * NO. OF DISCHARGERS                                                                               *
   LOW FLOW:   2,516 CFS      *          NEXT ADJACENT:       16              52               3              46             117  *
                              *              WITH FLOW:       16              52               3              11              82  *
                              *                                                                                                  *
                              *             CUMULATIVE: _ _ _ _ _23/23 _ _ _ _ _ _84/84 _ _ _ _ _ _7/7 _ _ _ _ _ _70/19 _ _ _ _ _ _184/133 *
                              *                                                                                                  *
                              ****************************************************************************************************

   NUMBER OF INDUSTRIAL
   DISCHARGERS *******************************************************************************************************************
   *                1    * 2       * 3       * 4       * 5       * 6       * 7       * 8       * 9       * 10      * 11        *
   * NEXT ADJACENT:   20 *      11 *       6 *       5 *       3 *       1 *       4 *       2 *       2 *       3 *       0   *
   *                     *         *         *         *         *         *         *         *         *         *           *
   *    CUMULATIVE: _ _ _31 * _ _ _86 * _ _ _ 9 * _ _ _14 * _ _ _ 3 * _ _ _ 1 * _ _ _ 4 * _ _ _ 2 * _ _ _ 3 * _ _ _ 5 * _ _ _ 1   *
   *                     *         *         *         *         *         *         *         *         *         *           *
   *               12    * 13      * 14      * 15      * 16      * 17      * 18      * 19      * 20      * 21      * 22        *
   * NEXT ADJACENT:    8 *       2 *       1 *       3 *       2 *       0 *       0 *       0 *       0 *       1 *       0   *
   *                     *         *         *         *         *         *         *         *         *         *           *
   *    CUMULATIVE: _ _ _ 9 * _ _ _ 2 * _ _ _ 3 * _ _ _ 3 * _ _ _ 2 * _ _ _ _ * _ _ _ 1 * _ _ _ 1 * _ _ _ 2 * _ _ _ 2 * _ _ _ 3   *
   *                     *         *         *         *         *         *         *
   *               23    * 24      * 25      * 26      * 27      * 28      *  TOTAL  *
   * NEXT ADJACENT:   12 *       4 *      27 *       3 *     124 *     127 *     371 *
   *                     *         *         *         *         *         *         *
   **** CUMULATIVE: _ _ _23 * _ _ _ 7 * _ _ _41 * _ _ _ 4 * _ _197 * _ _201 * _ _660 *

   DOWNSTREAM
     UTILITY         U P S T R E A M    U T I L I T Y    I D E N T I F I C A T I O N    N U M B E R S

   42440501500000    77777777777773    42348001500000    46146015100000    42760901510000    42926001510000    42997121500000

                     36070501500000    36266501500000
```

Figure 7. Worksheet for the City of Harrisburg, Susquehanna River Source.

number of dischargers about half of the total (371 out of 660) were located between the Susquehanna intake and the next upstream utilities.

The percent municipal wastewater flow was then calculated by dividing the total municipal flow by the average and low stream flows printed on the left side. For this case 381/34,418 and 381/2516 provided the percent municipal wastewater estimates of 1.1 percent and 15.1 percent, respectively.

The results of these calculations were summarized and presented in the next section.

SECTION 5

RESULTS - WASTEWATER IN DRINKING WATER SUPPLIES

Efficient presentation of results developed from tens of thousands of data points requires knowledge of the viewpoints and objectives of the readers. Presentation of the "raw" data provides the most information to the widest audience. However, this requires more effort by each user to extract the particular information of interest. The approach used in this study was to provide a hierarchy of outputs as follows:

1. WIRW data base - data available on 540 utilities, 1,246 source waters and about 30,000 dischargers. The data is in a digital media at the EPA Washington Computer Center (WCC). This is the raw data output of the study. It has wide use but requires knowledge of computer data processing to obtain the information of interest.

2. Discharges to drinking water tables - data on the next adjacent and cumulative flows and numbers of dischargers by type contributing to source waters. This output consists of worksheets as shown in Figure 6 for 588 source waters. The worksheets are in paper media, hence easier for more users to access and use.

3. Municipal wastewater in drinking water tables - summarizes the cumulative number and flow of municipal wastewater dischargers for each utility and source water. This output consists of 55 pages of tables presented in this section of the report. Its use is oriented toward the user specifically interested in those drinking water supplies being impacted by municipal dischargers.

4. Summary tables - presents those areas and cities which appeared to have the greatest potential for wastewater impact on drinking water. These tables are presented in the Results and Executive Summary sections of this report for easy access to a wide audience.

It can be seen that at each stage the information content of the output was reduced by an order of magnitude, the tradeoff being information content versus ease of use and utility by a particular user (in this case, one who is particularly interested in the impact of municipal wastewater discharges on water supply systems).

SUMMARY RESULTS

Three summary tables are presented to indicate those cities and drinking water sources which are estimated to be the most highly impacted by wastewater dischargers according to available data.

Cities Impacted by Greatest Numbers of Dischargers

Table 7 presents a list of twenty cities which obtain drinking water from water supplies impacted by the greatest number of dischargers. The table is organized according to the cumulative number of dischargers for each city. The cumulative number includes all dischargers from the point of abstraction to the head of the basin. Not surprisingly, this organization shows those cities near the bottom of three large river basins, the Mississippi, Ohio and Missouri, as having the greatest number of dischargers contributing to their water supplies. However, since many of these dischargers are hundreds or even thousands of miles away, the actual impact may not be as significant as it appears.

Since large rivers also have large flows, the percent wastewater under average flow conditions is relatively low for most of the cities listed. Low flow conditions on the Ohio and upper Mississippi and Missouri may be significant. However, this includes the flows from dischargers hundreds of miles away, and does not take into account the fate of instream degradation of pollutants. Therefore, these figures represent maximum impacts.

The Next Adjacent Columns in Table 7 show the number of dischargers between the water supply abstraction point and the next upstream utility. For example, there are 26 dischargers between Gretna and New Orleans water intakes, a distance of less than 10 miles. The number of next adjacent dischargers to Metairie in the New Orleans area is 1,597. This indicates that 1,597 dischargers enter on the Mississippi below Cape Girardeau, on the Ohio below Paducah, on the lower Arkansas and lower Red rivers. Therefore, the number of dischargers within a few hundred miles upstream from the New Orleans area is closer to 2,000 and the other 18,000 are probably too far away to have much impact except for the most conservative pollutants or for a large peak discharge caused by an upset condition or treatment failure.

TABLE 7. SOURCE WATERS IMPACTED BY GREATEST NUMBERS OF DISCHARGERS

STATE	CITY NAME	PUB	SOURCEWATER	POPULATION X1000	CUMULATIVE			NEXT ADJACENT			% WASTEWATER	
					TOTAL # OF DISCHARGERS	MUNICIPAL	INDUSTRIAL	TOTAL # OF DISCHARGERS	MUNICIPAL	INDUSTRIAL	AVERAGE FLOW	LOW FLOW
LA	CHALMETTE	610	MISSISSIPPI R	44	20,606	7,028	13,578	1	1	0	1.8	---
LA	GRETNA	610	MISSISSIPPI R	25	20,605	7,027	13,578	26	9	17	1.8	---
LA	NEW ORLEANS	610	MISSISSIPPI R	550	20,579	7,018	13,561	6	3	3	1.8	---
LA	MARRERO	610	MISSISSIPPI R	600	20,573	7,015	13,558	14	9	5	1.8	---
LA	METAIRIE	610	MISSISSIPPI R	232	20,559	7,006	13,553	1,597	1,407	190	1.8	---
MO	CAPE GIRARDEAU	610	MISSISSIPPI R	34	9,540	3,495	6,045	1,042	275	767	2.1	9.3
KY	PADUCAH	610	OHIO R	43	8,400	1,663	6,737	143	27	116	1.0	8.6
MO	ST. LOUIS	610	MISSISSIPPI R	600	8,345	3,183	5,162	32	7	25	2.2	10
IN	EVANSVILLE	610	OHIO R	150	6,230	1,082	5,148	685	202	483	1.1	19
KY	LOUISVILLE	610	OHIO R	700	5,544	879	4,665	61	13	48	1.4	24
IN	JEFFERSONVILLE	610	OHIO R	42	5,483	866	4,617	284	80	204	1.3	24
OH	CINCINNATI	610	OHIO R	850	4,753	728	4,025	21	4	17	1.3	18
KY	FT. THOMAS	610	OHIO R	30	4,732	724	4,008	253	103	150	1.2	17
KY	FT. THOMAS	610	OHIO R	100	4,673	751	3,922	0	0	0	1.3	18
OH	PORTSMOUTH	610	OHIO R	50	4,474	621	3,853	76	12	64	1.0	7.6
KY	ASHLAND	610	OHIO R	50	4,398	609	3,789	1,108	75	1,033	1.0	7.5
MO	ST. LOUIS	610	MISSOURI R	600	4,276	1,609	2,667	693	164	529	1.3	12
IL	ALTON	610	MISSISSIPPI R	57	4,037	1,567	2,470	784	296	488	3.2	15
MO	JEFFERSON CITY	610	MISSOURI R	34	3,575	1,441	2,134	712	274	438	1.3	12
WV	HUNTINGTON	610	OHIO R	--	3,290	534	2,756	739	116	623	1.2	9.4

Cities Estimated to Have the Highest Percent of Municipal Wastewater

Table 8 presents 25 cities ranked according to percent municipal wastewater under average source water flow conditions. Included in Table 8 for reference are percent wastewater estimates based on a simple nonconservative model (see Section 6), and estimates of the number of municipal and industrial dischargers.

Certain utilities with higher estimates of percent wastewater were excluded from this summary because the resolution of the data sources was not considered sufficient. These were utilities using water from small basins with small source water flows. In this case, errors in wastewater flows or source water flows can cause significant variations in the percent wastewater estimates. These cases need to be examined in greater detail before an accurate estimate of percent wastewater can be made.

The degraded pollutant estimates show some decrease from the conservative estimates. In one case (Alton), it appears that most of the wastewater is discharged some distance upstream, since the nonconservative estimate (.22) is considerably less than the conservative estimate (3.2).

It is recommended that the utilities listed in Table 8 be considered as a "shopping list" of utilities to be investigated in more detail regarding the potential human exposure to wastewater pollutants, rather than as a list of the utilities with the greatest impacts. One reason is because of data resolution and lack of industrial flow data, and the other is that many of these cities use more than one water source. For example, Columbia, South Carolina, uses three other sources in addition to the Saluda River, and Ypsilanti uses eight wells in addition to the Huron River.

Cities Estimated to Have the Highest Municipal Wastewater Loading

Another method of presenting impact is in terms of mass loading of pollutants on the population served. Assuming that the population for each city uses or is exposed to the same average flow of water per capita, then the mass loading of pollutants on the population is proportional to the population times the percent wastewater in the water supply.

Table 9 presents a list of twenty-five population centers which are estimated to have the greatest loading or exposure to municipal wastewater in drinking water supplies. The cities were ranked according to the product of population and the conservative estimate of percent wastewater. The nonconservative or degraded percent is also shown for reference.

TABLE 8. SOURCE WATER IMPACT ACCORDING TO AVERAGE FLOW PERCENT WASTEWATER

State	City	Line[1]	Source Water	Population X1000	Percent Wastewater		No. of Dischargers		
					Conservative(2)	Degraded(3)	Total	Municipal	Industrial
SC	Columbia	259	Saluda R	228	16	9.8	153	52	101
MI	Ypsilanti	323	Huron R	30	13	11	38	9	29
SC	Greenwood	258	Lk Greenwood/Saluda R	29	7.7	5.4	110	33	77
CO	Pueblo	495	Arkansas R	95	7.6	5.3	74	32	42
NJ	Little Falls	055	Passaic R	333	4.9	4.1	154	44	110
ND	Millburn	054	Passaic R	234	4.8	4.2	19	9	10
CO	Thornton	335	Clear Ck	60	4.5	4.2	63	12	51
IN	Indianapolis	464	White R	680	4.3	3.0	102	33	69
NJ	Elizabeth	166	Del-Raritan CA	500	4.3	3.9	17	5	12
NJ	Princeton	162	Del-Raritan CA	25	4.3	3.9	17	5	12
PA	Bryn Mawr/Philadelphia	149	Neshaminy Ck	820	3.8	3.5	30	9	21
PA	Middletown/Philadelphia	140	Neshaminy Ck	759	3.8	3.5	30	9	21
AL	Langdale	235	Chattahoochee R	25	3.8	2.3	39	21	18
AL	Birmingham	207	Cabaha R	650	3.6	3.4	19	5	14
GA	La Grange	234	Chattahoochee R	32	3.6	2.2	28	16	12
PA	Philadelphia	155	Schuylkill R	1950	3.5	2.5	240	65	175
TX	Ingleside	551	Nueces R	30	3.5	3.2	19	19	0
WI	Oshkosh/Appleton	273/274	Lk Winnebago	53	3.3	2.4	174	45	129
GA/AL	Columbus/Phenix City	237/236	Lk Oliver	134/28	3.2	1.5	42	0	42
CO	Westminster	334	Clear Ck	35	3.2	3.0	54	14	40
IL	Alton	380	Mississippi R	57	3.2	.22	4037	296	3741
TX	Dallas	539	Lk Ray Hubbard	878	2.8	2.7	12	4	8
OH	Bowling Green	327	Maumee R	26	2.8	1.6	380	139	241
CO	Englewood	339	S. Platte R	36	2.6	2.4	31	6	25
SC	Lancaster	267	Catawba R	25	2.3	1.5	169	17	152

1) Line number refers to Table 10, Section 5.
2) Cumulative percent wastewater estimates under average source water flow conditions.
3) Cumulative percent wastewater estimates using exponential degradation model.

TABLE 9. SOURCE WATER IMPACT ACCORDING TO POPULATION AND PERCENT WASTEWATER

State	City	Line(1)	Source Water	Pop X1000	Percent Wastewater	
					Conservative(2)	Degraded(3)
PA	Philadelphia	155	Schuylkill R	1,950	3.5	2.5
SC	Columbia	259	Saluda R	228	16	9.8
PA	Bryn Mawr	149	Neshaminy Ck	820	3.8	3.5
IN	Indianapolis	464	White R	680	4.3	3.0
PA	Middletown	140	Neshaminy Ck	759	3.8	3.5
TX	Dallas	539	Lk Ray Hubbard	878	2.8	2.7
AL	Birmingham	207	Cabaha R	650	3.6	3.4
NJ	Elizabeth	166	Delaware-Raritan CA	500	4.3	3.9
MD	Baltimore	124	Susquehanna R	1,755	1.2	0.57
NJ	Little Falls	055	Passaic R	333	4.9	4.1
MO	St. Louis	381	Mississippi R	600	2.2	0.13
LA	New Orleans	525	Mississippi R	550	1.8	0.017
NJ	Millburn	054	Passaic R	234	4.8	4.2
OH	Cincinnati	447	Ohio R	850	1.3	0.20
LA	Marrero	524	Mississippi R	600	1.8	0.018
MD	Hyattsville/Wash DC	178	Potomac R	1,300	0.8	0.39
KY	Louisville	454	Ohio R	700	1.4	0.26
MO	Kansas City	359	Missouri R	750	1.2	0.22
TX	Fort Worth	538	Ben Brook Lk	490	1.6	1.4
MO	St. Louis	362	Missouri R	600	1.3	.04
CO	Pueblo	495	Arkansas R	95	7.6	5.3
SC	Rock Hill	266	Catawba R	426	1.4	0.71
NJ	Elizabeth	167	Raritan & Millstone	500	1.1	.95
IL	East St. Louis	382	Mississippi R	215	2.2	0.13
GA	Columbus	237	Lk Oliver	134	3.2	1.5

1) Line number refers to Table 10, Section 5.
2) Cumulative percent wastewater estimates under annual average source water flow conditions.
3) Cumulative percent wastewater estimates using exponential degradation model.

This analysis gives more weight to those utilities serving larger populations. The large population centers such as Philadelphia and Dallas moved up in rank relative to Table 8. Also other large centers appear such as St. Louis, New Orleans, Cincinnati, Washington D.C., Louisville and Kansas City.

MUNICIPAL WASTEWATER IN DRINKING WATER RESULTS

The primary working level output with respect to the principal objectives of this project is considered to be Table 10 presented on pages 41 through 94 of this section. This 55 page table summarizes for each source water for each utility: the population served by the utility, the cumulative number and flow for each type of municipal discharger, the cumulative percent municipal wastewater in drinking water and the total number of municipal and industrial dischargers.

Each basin is listed in order by PUB number from 010-995, except for those with zero dischargers and source waters which could not be located. The cities within each basin are arranged from upstream to downstream according to the source water that serves it. Small source waters which could not be located were given a 777 PUB code and basins with no dischargers were placed at the end of the table.

To aid the user in reviewing the data in Table 10, an index organized alphabetically by state and city was prepared to facilitate accessing desired information. The City Name Index located in Appendix A provides line numbers keyed to Table 10. Each source water in Table 10 has a line number associated with it in order from 1 - 804. The index can be used to locate a city name of interest alphabetically, which then yields the proper line number for Table 10. A few line numbers, such as line 104, refer to nodes defined at strategic locations in larger river basins, and used to accumulate all upstream dischargers for downstream routing.

Another significant output of this study is the routing of wastewater downstream. No other available information shows the relations between dischargers and utilities concatenated downstream or upstream. Table 11 on pages 95-103 presents an index showing hydrologic relations between water supply utilities. It provides a tracing of the utilities in each PUB that includes the furthest downstream utility and each successive upstream utility. This index was constructed using the data from the upstream/downstream pointers of each utility, and was used to trace the impact of wastewater to specific utilities.

Line numbers for Table 10 are provided in parenthesis next to each utility name to aid in the use of Tables 10 and 11 simultaneously. This will allow the user to have a better idea of the structural relation of the utilities and dischargers.

TABLE 10. ESTIMATED EXTENT OF MUNICIPAL AND INDUSTRIAL DISCHARGES AT PUBLIC DRINKING WATER SUPPLY INTAKE POINTS

						Upstream Wastewater Sources Contained in Drinking Water Supply										
						Primary Effluent		Secondary Effluent		Tertiary Effluent		Unknown Effluent		% Wastewater @ Water Intake		
Line No.	Public Utility Basin # (1)	City Name	St.	Water Intake Source Name	Population Served 000's (2)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Low Flow (5)	Average Flow (6)	No. of Upstream Industrial Dischargers (7)
1	010	ANCHORAGE	AK	SHIP C	70	0	0	1/1	0	0	0	0	0	e	e	1
2	020	BUTTE	MT	BASIN C RE	46	0	0	0	0	0	0	0	0	0	0	0
3	020	BUTTE	MT	MOULTON RE	46	0	0	0	0	0	0	0	0	0	0	0
4	020	MISSOULA	MT	RATTLESNAKE C	45	0	0	0	0	0	0	0	0	0	0	0
5	020	RICHLAND	WA	COLUMBIA R	30	2/2	3	15/15	2	0	0	12/1	0	e	e	106
6	020	YAKIMA	WA	NACHES R	47	0	0	0	0	0	0	1/1	0	e	e	2

Footnotes

1. A Public Utility Basin is a special river basin construrt used in this study as an aggregate of the USGS River Basins. See text for additional information.
2. Retail population served by a utility as indicated on the IPWS file from the U.S. EPA.
3. "N" indicates the total number of municipal dischargers counted for this category. "n" indicates the number of municipal dischargers for which flow data is available.
4. Yearly average of effluent discharge as indicated by the NEEDS Survey or MWFI of EPA.
5. Total discharge flow divided by 7-day, 10-year low flow as indicated by nearest USGS gaging station. The number e is a value less than .05%.
6. Total discharge flow divided by average flow as indicated by nearest USGS gaging station. The number e is a value less than .05%.
7. Total number of industrial and municipal dischargers.

TABLE 10. ESTIMATED EXTENT OF MUNICIPAL AND INDUSTRIAL DISCHARGES AT PUBLIC DRINKING WATER SUPPLY INTAKE POINTS

Line No.	Public Utility Basin # (1)	City Name	St.	Water Intake Source Name	Population Served 000's (2)	Upstream Wastewater Sources Contained in Drinking Water Supply										
						Primary Effluent		Secondary Effluent		Tertiary Effluent		Unknown Effluent		% Wastewater @ Water Intake		
						Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Low Flow (5)	Average Flow (6)	No. of Upstream Industrial Dischargers (7)
7	020	WALLA WALLA	WA	MILL C	30	0	0	0	0	0	0	0	0	0	0	0
8	020	LONGVIEW	WA	COWLITZ R	35	0	0	6/6	0	0	0	0	0	0	0	15
9	020	POCATELLO	ID	MINK C	40	0	0	0	0	0	0	0	0	0	0	0
10	020	POCATELLO	ID	WHISKEY JACK C	40	0	0	0	0	0	0	0	0	0	0	0
11	020	PORTLAND	OR	BULL RUN R	400	0	0	0	0	0	0	3/0	0	0	0	5
12	020	EUGENE	OR	MCKENZIE R	85	0	0	0	0	0	0	0	0	0	0	7
13	020	CORVALLIS	OR	WILLAMETTE R	36	1/1	0	8/8	13	0	0	4/0	0	.6	.1	82
14	020	CORVALLIS	OR	NE ROCK C	36	0	0	0	0	0	0	0	0	0	0	0
15	020	CORVALLIS	OR	SE ROCK C	36	0	0	0	0	0	0	0	0	0	0	0
16	020	CORVALLIS	OR	GRIFFITH C	36	0	0	0	0	0	0	0	0	0	0	0
17	020	SALEM	OR	N SANTIAM R	73	0	0	0	0	0	0	0	0	0	0	5
18	030	MEDFORD	OR	ROGUE R	32	0	0	2/2	2	0	0	2/1	0	.4	0	24
19	110	BIDDEFORD	MI	SACO R	38	0	0	2/2	2	1/1	0	5/2	2	.7	.1	28
20	140	PORTLAND	MI	SEBAGO LK	133	0	0	0	0	0	0	1/1	0	0	0	5
21	180	NASHUA	NH	PENNICHUCK BK	45	0	0	0	0	0	0	0	0	0	0	0
22	180	CONCORD	NH	PENACOOK LK	32	0	0	0	0	0	0	0	0	0	0	0
23	180	LOWELL	MA	MERRIMAC R	94	5/5	3	16/16	35	3/3	9	21/9	28	8.0	1.0	196
24	180	LAWRENCE	MA	MERRIMAC R	67	6/6	4	20/20	42	3/3	9	29/13	64	13	1.6	265
25	180	WORCESTER	MA	KETTLE & LYNDE BR R	177	0	0	0	0	0	0	0	0	0	0	0

TABLE 10. ESTIMATED EXTENT OF MUNICIPAL AND INDUSTRIAL DISCHARGES AT PUBLIC DRINKING WATER SUPPLY INTAKE POINTS

						Upstream Wastewater Sources Contained in Drinking Water Supply										
						Primary Effluent		Secondary Effluent		Tertiary Effluent		Unknown Effluent		% Wastewater @ Water Intake		
Line No.	Public Utility Basin # (1)	City Name	St.	Water Intake Source Name	Population Served 000's (2)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Low Flow (5)	Average Flow (6)	No. of Upstream Industrial Dischargers (7)
26	180	WORCESTER	MA	KENDALL R	177	0	0	0	0	0	0	0	0	0	0	0
27	180	WORCESTER	MA	HOLDEN R	177	0	0	0	0	0	0	0	0	0	0	0
28	180	WORCESTER	MA	PINE HILL R	177	0	0	0	0	0	0	0	0	0	0	0
29	180	FITCHBURG	MA	WACHUSETT LK	43	0	0	0	0	0	0	0	0	0	0	0
30	180	FITCHBURG	MA	MEETINGHOUSE P	43	0	0	0	0	0	0	0	0	0	0	0
31	181	FITCHBURG	MA	SCOTT RE	43	0	0	0	0	0	0	0	0	0	0	0
32	215	PEABODY	MA	IPSWICH R	50	0	0	0	0	0	0	0	0	0	0	0
33	215	BEVERLY	MA	IPSWICH R	40	0	0	0	0	0	0	0	0	0	0	5
34	226	AUBURN	NY	OWASCO LK	34	0	0	1/1	0	0	0	1/1	0	e	e	2
35	227	ITHACA	NY	FALL C	25	0	0	0	0	0	0	0	0	0	0	1
36	227	ITHACA	NY	SIX MILE C	38	0	0	0	0	0	0	0	0	0	0	0
37	229	WATERTOWN	NY	BLACK R	33	2/2	0	2/2	1	0	0	0	0	1	e	10

TABLE 10. ESTIMATED EXTENT OF MUNICIPAL AND INDUSTRIAL DISCHARGES AT PUBLIC DRINKING WATER SUPPLY INTAKE POINTS

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38	230	UTICA	NY	GRAY RE	150	0	0	0	0	0	0	0	0	0	0	0
39	230	UTICA	NY	HINCKLEY RE	150	0	0	0	0	0	0	0	0	0	0	0
40	230	AMSTERDAM	NY	5 IMPOUNDING RE	27	0	0	0	0	0	0	0	0	0	0	0
41	230	NEWTONVILLE	NY	STONEY C	65	0	0	0	0	0	0	0	0	0	0	0
42	230	NEWTONVILLE	NY	MOHAWK R	65	4/4	1	10/7	71	0	0	5/4	11	14	1.4	34
43	230	TROY	NY	TOMHANNOCK RE	63	0	0	0	0	0	0	0	0	0	0	0
44	230	KINGSTON	NY	MINK HOLLOW BK	30	0	0	0	0	0	0	0	0	0	0	0
45	230	ALBANY	NY	HANNACROIX C	130	0	0	0	0	0	0	0	0	0	0	0
46	230	ALBANY	NY	BASIC C RE	130	0	0	0	0	0	0	0	0	0	0	0
47	230	POUGHKEEPSIE	NY	HUDSON R	41	14/14	7	43/37	215	4/3	16	30/17	37	10	2.1	130
48	230	NEWBURGH	NY	SILVER & PATTON	30	0	0	0	0	0	0	0	0	0	0	0
49	230	OSSINING	NY	INDIAN BK	27	0	0	0	0	0	0	0	0	0	0	0
50	230	YONKERS	NY	SAWMILL RE	215	0	0	0	0	0	0	0	0	0	0	0
51	230	NEW YORK	NY	CROTON R SYSTEM	7800	0	0	0	0	0	0	0	0	0	0	0
52	230	NEW YORK	NY	CATSKILL SYSTEM	7800	0	0	0	0	0	0	0	0	0	0	0

TABLE 10. ESTIMATED EXTENT OF MUNICIPAL AND INDUSTRIAL DISCHARGES AT PUBLIC DRINKING WATER SUPPLY INTAKE POINTS

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						Primary Effluent		Secondary Effluent		Tertiary Effluent		Unknown Effluent		% Wastewater @ Water Intake		
Line No.	Public Utility Basin # (1)	City Name	St.	Water Intake Source Name	Population Served 000's (2)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Low Flow (5)	Average Flow (6)	No. of Upstream Industrial Dischargers (7)
53	235	ROME	NY	FISH C	52	0	0	1/1	0	0	0	0	0	e	e	3
54	240	MILBURN	NJ	PASSAIC R	234	0	0	6/6	6	0	0	3/1	2	266	4.8	19
55	240	LITTLE FALLS	NJ	PASSAIC R	333	0	0	21/20	46	4/4	1	9/3	11	187	4.9	154
56	240	NEWARK	NJ	PEQUANNECK R	382	0	0	5/4	3	3/3	0	11/1	3	30	.8	56
57	250	SHREWSBURY	NJ	JUMPING BK	220	0	0	0	0	0	0	0	0	0	0	0
58	250	SHRFWSBURY	NJ	SWIMMING R	220	0	0	0	0	0	0	1/0	0	e	e	3
59	305	ANNAPOLIS	MD	BROAD C	40	1/1	0	0	0	0	0	0	0	e	e	2
60	310	BINGHAMPTON	NY	SUSQUEHANNA R	65	0	0	3/3	1	1/1	0	4/2	11	6.5	.3	17
61	310	ELMIRA	NY	CHEMUNG R	72	1/1	0	8/8	6	1/1	0	0	0	6.2	.2	28
62	310	SCRANTON	PA	SUMMIT LK	102	0	0	0	0	0	0	0	0	0	0	0
63	310	SCRANTON	PA	LK SCRANTO OVI	102	0	0	0	0	0	0	0	0	0	0	0
64	310	SCRANTON	PA	WILLIAMS BR RE	102	0	0	0	0	0	0	0	0	0	0	0

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						Upstream Wastewater Sources Contained in Drinking Water Supply										
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Line No.	Public Utility Basin # (1)	City Name	St.	Water Intake Source Name	Population Served 000's (2)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Low Flow (5)	Average Flow (6)	No. of Upstream Industrial Dischargers (7)
65	310	SCRANTON	PA	HAZARD P	102	0	0	0	0	0	0	0	0	0	0	0
66	310	SCRANTON	PA	MARSHWOOD DAM	102	0	0	0	0	0	0	0	0	0	0	0
67	310	SCRANTON	PA	DUNMOORE NO 3 DAM	102	0	0	0	0	0	0	0	0	0	0	0
68	310	SCRANTON	PA	DUNMOORE NO 4 DAM	102	0	0	0	0	0	0	0	0	0	0	0
69	310	SCRANTON	PA	LK SCRANTON	102	0	0	0	0	0	0	0	0	0	0	0
70	310	SCRANTON	PA	ELMHURST DAM	102	0	0	0	0	0	0	0	0	0	0	0
71	310	SCRANTON	PA	OAK RN DAM	102	0	0	0	0	0	0	0	0	0	0	0
72	310	SCRANTON	PA	LK HENRY	102	0	0	0	0	0	0	0	0	0	0	0
73	310	SCRANTON	PA	LEHIGH PUMP DAM	102	0	0	0	0	0	0	0	0	0	0	0
74	310	WILKES BARRE	PA	CRYSTAL LK RE	453	0	0	0	0	0	0	0	0	0	0	0
75	310	WILKES BARRE	PA	WANAMIE RE	453	0	0	0	0	0	0	0	0	0	0	0
76	310	WILKES BARRE	PA	WHITE OAK RE	453	0	0	0	0	0	0	0	0	0	0	0
77	310	WILKES BARRE	PA	LAUREL RN RE	453	0	0	0	0	0	0	0	0	0	0	0
78	310	WILKES BARRE	PA	OLYPHANT RE	453	0	0	0	0	0	0	0	0	0	0	0
79	310	WILKES BARRE	PA	CHENERY RE	453	0	0	0	0	0	0	0	0	0	0	0

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Line No.	Public Utility Basin # (1)	City Name	St.	Water Intake Source Name	Population Served 000's (2)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Low Flow (5)	Average Flow (6)	No. of Upstream Industrial Dischargers (7)
80	310	WILKES BARRE	PA	GRIFFIN LK	453	0	0	0	0	0	0	0	0	0	0	0
81	310	WILKES BARRE	PA	RUSHBROOK RE	453	0	0	0	0	0	0	0	0	0	0	0
82	310	WILKES BARRE	PA	PINE RN	453	0	0	0	0	0	0	0	0	0	0	0
83	310	WILKES BARRE	PA	FALL BK RE	453	0	0	0	0	0	0	0	0	0	0	0
84	310	WILKES BARRE	PA	FOREST CITY-LAC	453	0	0	0	0	0	0	0	0	0	0	0
85	310	WILKES BARRE	PA	BRACE BK RE	453	0	0	0	0	0	0	0	0	0	0	0
86	310	WILLIAMSPORT	PA	HAGERMAN RN	49	0	0	0	0	0	0	0	0	0	0	0
87	310	WILLIAMSPORT	PA	LYCOMING C	49	0	0	0	0	0	0	0	0	0	0	0
88	310	WILLIAMSPORT	PA	MOSQUITO C	49	0	0	0	0	0	0	0	0	0	0	0
89	310	MILTON	PA	W. B. SUSQUEHANNA R	30	5/5	0	17/17	29	2/2	5	18/6	3	5.8	.3	221
90	310	MILTON	PA	WHITE DEER C	30	0	0	0	0	0	0	0	0	0	0	0
91	310	MILTON	PA	SPRUCE RN DAM	30	0	0	0	0	0	0	0	0	0	0	0
92	310	SHAMOKIN	PA	BRUSH VALLEY RE	42	0	0	0	0	0	0	0	0	0	0	0
93	310	SHAMOKIN	PA	TOUT RN #4	42	0	0	0	0	0	0	0	0	0	0	0
94	310	SHAMOKIN	PA	BEAR GAP #1 & #	42	0	0	0	0	0	0	0	0	0	0	0
95	310	SHAMOKIN	PA	#6 RESERVOIR	42	0	0	0	0	0	0	0	0	0	0	0

TABLE 10. ESTIMATED EXTENT OF MUNICIPAL AND INDUSTRIAL DISCHARGES AT PUBLIC DRINKING WATER SUPPLY INTAKE POINTS

						Upstream Wastewater Sources Contained in Drinking Water Supply										
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Line No.	Public Utility Basin # (1)	City Name	St.	Water Intake Source Name	Population Served 000's (2)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Low Flow (5)	Average Flow (6)	No. of Upstream Industrial Dischargers (7)
96	310	ALTOONA	PA	HOMERS GAP RN	86	0	0	0	0	0	0	0	0	0	0	0
97	310	ALTOONA	PA	MILL RN	86	0	0	0	0	0	0	0	0	0	0	0
98	310	ALTOONA	PA	KITTANING RN	86	0	0	0	0	0	0	0	0	0	0	0
99	310	ALTOONA	PA	GLEN WHITE RN	86	0	0	0	0	0	0	0	0	0	0	0
100	310	HUNTINGTON	PA	STONE C	100	0	0	0	0	0	0	0	0	0	0	0
101	310	LEWISTON	PA	TREASTER RN	33	0	0	0	0	0	0	0	0	0	0	0
102	310	LEWISTON	PA	LAUREL RN	33	0	0	0	0	0	0	0	0	0	0	0
103	310	LEWISTON	PA	WEST BK	33	0	0	0	0	0	0	0	0	0	0	0
104	310	LOGICAL CITY #3	PA	JUNIATA R		0	0	0	0	0	0	0	0	0	0	0
105	310	HARRISBURG	PA	DEHART RE	80	0	0	0	0	0	0	0	0	0	0	0
106	310	HARRISBURG	PA	STONEY C	53	1/0	0	4/1	5	0	0	2/0	0	125	7.8	23
107	310	HARRISBURG	PA	BEAVER C	53	0	0	0	0	0	0	0	0	0	0	0
108	310	HARRISBURG	PA	SUSQUEHANNA R	80	23/23	18	84/84	340	7/7	5	70/19	18	15	1.1	660
109	310	LEMOYNE	PA	CONODOGUINET C	73	0	0	0	0	0	0	0	0	0	0	0
110	310	LEMOYNE	PA	YELLOW BREECHES	73	0	0	0	0	0	0	0	0	0	0	0

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111	310	LEBANON	PA	GOLD MINE C	43	0	0	0	0	0	0	0	0	0	0	0
112	310	LEBANON	PA	FISHING C	43	0	0	0	0	0	0	0	0	0	0	0
113	310	LEBANON	PA	SWATRA C	43	0	0	0	0	0	0	0	0	0	0	0
114	310	HARRISBURG	PA	SWATRA C	53	0	0	0	0	0	0	0	0	0	0	0
115	310	HANOVER	PA	L CONEWAGO	29	0	0	0	0	0	0	0	0	0	0	0
116	310	HANOVER BORO	PA	S. BR CONEWAGO R	28	0	0	0	0	0	0	0	0	0	0	0
117	310	YORK	PA	S. BR CONEWAGO R	119	0	0	0	0	0	0	0	0	0	0	0
118	310	HANOVER	PA	LONG ARM C	29	0	0	0	0	0	0	0	0	0	0	0
119	310	YORK	PA	YORK RE	119	0	0	0	0	0	0	0	0	0	0	0
120	310	LANCASTER	PA	SUSQUEHANNA R	150	26/26	43	106/106	402	8/8	5	78/22	18	19	1.3	821
121	310	LANCASTER	PA	CONESTOGA C	150	2/2	2	2/2	2	0	0	0	0	11	1.0	22
122	310	CHESTER	PA	SUSQUEHANNA R	130	28/28	45	112/112	434	8/8	5	80/23	20	20	1.4	879
123	310	CHESTER	PA	OCTARARO C	130	1/1	0	1/1	0	0	0	1/1	0	e	e	9
124	310	BALTIMORE	MD	SUSQUEHANNA R	1755	29/29	45	113/113	434	8/8	5	81/24	20	15	1.2	888

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						Upstream Wastewater Sources Contained in Drinking Water Supply										
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125	320	NEW YORK	NY	DELAWARE R	7800	0	0	0	0	0	0	0	0	0	0	0
126	320	EASTON	PA	DELAWARE R	30	0	0	11/11	12	3/3	0	16/5	2	.6	.1	112
127	320	HAZLETON	PA	HARLEIGH	41	0	0	0	0	0	0	0	0	0	0	0
128	320	HAZLETON	PA	DRECK C	41	0	0	0	0	0	0	0	0	0	0	0
129	320	HAZLETON	PA	BARNES RUN	41	0	0	0	0	0	0	0	0	0	0	0
130	320	HAZLETON	PA	MT PLEASANT	41	0	0	0	0	0	0	0	0	0	0	0
131	320	ALLENTOWN	PA	L. LEHIGH R	120	0	0	0	0	0	0	1/1	0	e	e	13
132	320	NORTHHAMPTON	PA	LEHIGH R	28	2/2	0	4/4	0	0	0	1/0	0	e	e	40
133	320	NORTHHAMPTON	PA	SPRING C RE	28	0	0	0	0	0	0	0	0	0	0	0
134	320	BETHLEHEM	PA	WILD C	110	0	0	0	0	0	0	0	0	0	0	0
135	320	BETHLEHEM	PA	WILD C	100	0	0	0	0	0	0	0	0	0	0	0
136	320	BETHLEHEM	PA	TUNK C	100	0	0	0	0	0	0	0	0	0	0	0
137	320	TRENTON	NJ	DELAWARE R	250	2/2	0	22/22	38	3/3	0	20/6	2	2.6	.3	219
138	320	LEVITTOWN	PA	DELAWARE R	90	5/5	15	25/25	49	3/0	0	24/8	36	6.4	.9	250
139	320	BRISTOL	PA	DELAWARE R	30	6/6	16	25/25	49	3/3	0	24/8	36	6.5	.9	256

TABLE 10. ESTIMATED EXTEND OF MUNICIPAL AND INDUSTRIAL DISCHARGES AT PUBLIC DRINKING WATER SUPPLY INTAKE POINTS

						Upstream Wastewater Sources Contained in Drinking Water Supply										
						Primary Effluent		Secondary Effluent		Tertiary Effluent		Unknown Effluent		% Wastewater @ Water Intake		
Line No.	Public Utility Basin # (1)	City Name	St.	Water Intake Source Name	Population Served 000's (2)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Low Flow (5)	Average Flow (6)	No. of Upstream Industrial Dischargers (7)
140	320	MIDDLETOWN	PA	NESHAMINY C	759	0	0	6/0	4	0	0	3/0	7	100	3.8	30
141	320	BENSALEM	PA	DELAWARE R	27	8/8	20	34/34	72	3/3	0	30/10	43	9.5	1.2	317
142	320	READING	PA	ANTOETAM LK	105	0	0	0	0	0	0	0	0	0	0	0
143	320	READING	PA	LK ONTELAUNEE	105	0	0	0	0	0	0	0	0	0	0	0
144	320	POTTSVILLE	PA	WOLF C RE	31	0	0	0	0	0	0	0	0	0	0	0
145	320	POTTSVILLE	PA	TAR RUN RE	31	0	0	0	0	0	0	0	0	0	0	0
146	320	POTTSVILLE	PA	EISENHUTH RE	31	0	0	0	0	0	0	0	0	0	0	0
147	320	POTTSVILLE	PA	INDIAN RUN RE	31	0	0	0	0	0	0	0	0	0	0	0
148	320	POTTSTOWN	PA	SCHUYLKILL R	35	2/2	2	14/14	27	0	0	14/5	1	12	1.6	100
149	320	BRYN MAWR	.PA	NESHAMINY C	820	0	0	6/6	4	0	0	3/2	7	100	3.8	30
150	320	BRYN MAWR	PA	PICKERING C	820	0	0	0	0	0	0	0	0	0	0	0
151	320	BRYN MAWR	PA	CRUM C	820	0	0	0	0	0	0	0	0	0	0	0
152	320	NORRISTOWN	PA	SCHUYLKILL R	80	2/2	2	28/27	41	1/1	1	15/5	1	17	2.4	178
153	320	PHILADELPHIA	PA	SCHUYLKILL R	600	4/2	12	37/22	69	3/3	9	21/14	1	121	3.5	240
154	320	PHILADELPHIA	PA	DELAWARE R	1950	8/8	0	42/42	17	3/3	0	30/10	7	1.5	.2	54

TABLE 10. ESTIMATED EXTEND OF MUNICIPAL AND INDUSTRIAL DISCHARGES AT PUBLIC DRINKING WATER SUPPLY INTAKE POINTS

						Upstream Wastewater Sources Contained in Drinking Water Supply										
						Primary Effluent		Secondary Effluent		Tertiary Effluent		Unknown Effluent		% Wastewater @ Water Intake		
Line No.	Public Utility Basin # (1)	City Name	St.	Water Intake Source Name	Population Served 000's (2)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharges cfs (4)	Low Flow (5)	Average Flow (6)	No. of Upstream Industrial Dischargers (7)
155	320	PHILADELPHIA	PA	SCHUYLKILL R	1950	4/2	12	37/22	69	1/3	9	21/14	1	121	3.5	240
156	320	W CHESTER	PA	CHESTER C	30	0	0	0	0	0	0	0	0	0	0	0
157	320	WILMINGTON	DE	HOOPES RE	150	6	0	0	0	0	0	0	0	0	0	0
158	320	WILMINGTON	DE	BRANDYWINE C	150	1/1	0	6/6	11	0	0	6/1	0	15	2.4	47
159	320	[illegible]YMONT	DE	RED CLAY C	75	0	0	0	0	0	0	1/1	1	7.1	1.6	8
160	320	CLAYMONT	DE	CHRISTIANA C	75	0	0	0	0	0		0	0	0	0	6
161	320	CLAYMONT	DE	WHITE CLAY C	75	1/1	0	4/4	0	0	0	0	0	e	e	16
162	320	PRINCETON	NJ	DELAWARE-RARITAN CA	25	0	0	1/1	1	2/2	1	2/0	0	8.2	4.3	17
163	320	WOODBRIDGE	NJ	ROBINSON R	167	0	0	0	0	0	0	0	0	0	0	0
164	320	WOODBRIDGE	NJ	DELAWARE-RARITAN CA	167	0	0	2/2	4	2/2	3	4/0	0	11	.7	16
165	320	SOMERVILLE	NJ	RARITAN R	30	0	0	3/3	1	0	0	8/0	0	5.3	.3	37
166	320	ELIZABETH	NJ	DELAWARE-RARITAN CA	500	0	0	1/1	1	2/2	3	2/0	0	8.2	4.3	17
167	320	ELIZABETH	NJ	RARITAN & MILLSTONE	500	0	0	1/1	0	0	0	2/1	8	17	1.1	15
168	320	ELIZABETH	NJ	RARITAN R	30	0	0	3/0	1	0	0	8/0	0	1.5	.1	37
169	325	HYATTSVILLE	MD	PATUXENT R	1300	0	0	1/1	0	0	0	3/0	0	e	e	6
170	325	ODENTON	MD	L. PATUXENT R.	40	0	0	1/1	0	0	0	0	0	e	e	7

TABLE 10. ESTIMATED EXTEND OF MUNICIPAL AND INDUSTRIAL DISCHARGES AT PUBLIC DRINKING WATER SUPPLY INTAKE POINTS

						Upstream Wastewater Sources Contained in Drinking Water Supply										
						Primary Effluent		Secondary Effluent		Tertiary Effluent		Unknown Effluent		% Wastewater @ Water Intake		
Line No.	Public Utility Basin # (1)	City Name	St.	Water Intake Source Name	Population Served 000's (2)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Low Flow (5)	Average Flow (6)	No. of Upstream Industrial Dischargers (7)
171	330	BALTIMORE	MD	N B PATAPSCO	1755	0	0	2/2	0	0	0	1/0	0	e	e	34
172	340	BALTIMORE	MD	GUNPOWDER FLS	1755	0	0	1/1	0	0	0	0	0	e	e	8
173	350	CUMBERLAND	MD	LK GORDON	40	0	0	0	0	0	0	0	0	e	e	0
174	350	HAGERSTOWN	MD	POTOMAC R	70	3/2	13	10/7	35	0	0	27/9	2	13	.8	283
175	350	FREDERICK	MD	MONOCACY R	28	2/2	0	8/8	0	3/3	1	4/1	2	6.4	.3	37
176	350	FREDERICK	MD	LINGANORE C	28	0	0	1/1	0	0	0	0	0	e	e	2
177	350	FAIRFAX	VA	GOOSE C	38	0	0	3/3	0	0	0	2/2	0	e	e	17
178	350	HYATTSVILLE	MD	POTOMAC R	1300	10/9	20	61/58	66	6/4	1	74/17	5	15	.6	588
179	360	CHESTERFIELD	VA	APPOMATTOX R	87	0	0	9/8	0	0	0	1/0	0	e	e	33
180	360	CHESTERFIELD	VA	SWIFT C	87	0	0	0	0	0	0	0	0	0	0	0
181	360	HOPEWELL	VA	APPOMATTOX R	26	0	0	11/10	0	0	0	2/1	0	e	e	41
182	360	PETERSBURG	VA	LK CHESDIN	55	0	0	11/10	0	0	0	2/1	0	e	e	41

TABLE 10. ESTIMATED EXTEND OF MUNICIPAL AND INDUSTRIAL DISCHARGES AT PUBLIC DRINKING WATER SUPPLY INTAKE POINTS

						Upstream Wastewater Sources Contained in Drinking Water Supply										
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Line No.	Public Utility Basin # (1)	City Name	St.	Water Intake Source Name	Population Served 000's (2)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Low Flow (5)	Average Flow (6)	No. of Upstream Industrial Dischargers (7)
183	370	LYNCHBURG	VA	PEDLAR RE	66	0	0	0	0	0	0	0	0	0	0	0
184	370	LYNCHBURG	VA	JAMES R	66	9/7	0	11/5	1	0	0	12/3	5	1.5	.2	70
185	370	CHARLOTTESVILLE	VA	RAGGED MT. RE	35	0	0	0	0	0	0	0	0	0	0	0
186	370	CHARLOTTESVILLE	VA	SUGAR HOLLOW RE	35	0	0	0	0	0	0	0	0	0	0	0
187	370	CHARLOTTESVILLE	VA	SF RIVANNA R	35	0	0	0	0	0	0	0	0	0	0	3
188	370	RICHMOND	VA	JAMES R	390	14/12	15	28/20	1	0	0	21/4	5	3.9	.3	184
189	370	CHESTERFIELD	VA	FALLING C	87	0	0	1/1	0	0	0	0	0	e	e	1
190	380	ANNANDALE	VA	OCCOQUAN R	390	0	0	11/10	4	1/1	0	8/1	0	50	.8	38
191	405	STATESVILLE	NC	S YADKIN R	25	0	0	0	0	0	0	0	0	0	0	0
192	405	STATESVILLE	NC	FOURTH C	25	0	0	0	0	0	0	0	0	0	0	0
193	405	WINSTON-SALEM	NC	YADKIN R	150	0	0	5/5	6	0	0	4/1	0	.9	.2	27
194	405	WINSTON-SALEM	NC	SALEM C	150	0	0	0	0	0	0	0	0	0	0	0
195	405	LEXINGTON	NC	YADKIN R	54	0	0	6/6	60	0	0	5/1	0	9.3	2.2	27

TABLE 10. ESTIMATED EXTEND OF MUNICIPAL AND INDUSTRIAL DISCHARGES AT PUBLIC DRINKING WATER SUPPLY INTAKE POINTS

						Upstream Wastewater Sources Contained in Drinking Water Supply										
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Line No.	Public Utility Basin # (1)	City Name	St.	Water Intake Source Name	Population Served 000's (2)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Low Flow (5)	Average Flow (6)	No. of Upstream Industrial Dischargers (7)
196	405	LEXINGTON	NC	ABBOTTS C	26	0	0	0	0	0	0	0	0	0	0	0
197	405	SALISBURY	NC	YADKIN R	32	0	0	13/13	76	0	0	5/1	0	7.4	1.5	68
198	405	CONCORD	NC	COLDWATER C	26	0	0	0	0	0	0	0	0	0	0	0
199	410	COLUMBUS	MS	LUXAPALILA R	31	0	0	2/2	3	0	0	1/1	0	8.1	.6	6
200	410	DALTON	GA	MILL C	65	0	0	0	0	0	0	0	0	0	0	0
201	410	DALTON	GA	CONASAUGA R	65	0	0	0	0	0	0	0	0	0	0	0
202	410	ROME	GA	OOSTANAULA R	40	0	0	3/3	10	0	0	0	0	2.0	.3	6
203	410	TUSCALOOSA	AL	NORTH R	67	0	0	1/1	0	0	0	0	0	e	e	1
204	410	GADSDEN	AL	COOSA R	60	1/1	0	21/19	43	0	0	0	0	4.1	.5	40
205	410	MONTGOMERY	AL	TALLAPOOSA R	180	2/2	0	32/32	27	0	0	2/1	2	19	.6	57
206	410	BIRMINGHAM	AL	SMITH LK	650	0	0	2/2	0	0	0	0	0	e	e	3
207	410	BIRMINGHAM	AL	CABAHA R	650	1/1	0	4/4	8	0	0	0	0	72	3.6	19
208	410	BIRMINGHAM	AL	INLAND LK	650	0	0	0	0	0	0	0	0	0	0	0
209	415	HIGH POINT	NC	DEEP R	61	0	0	0	0	0	0	0	0	0	0	0
210	415	GREENSBORO	NC	LK TOWNSEND	160	0	0	0	0	0	0	0	0	0	0	1
211	415	GREENSBORO	NC	HORSE PEN C	150	0	0	0	0	0	0	0	0	0	0	0
212	415	GREENSBORO	NC	LK BRANDT	150	0	0	0	0	0	0	0	0	0	0	1

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						Upstream Wastewater Sources Contained in Drinking Water Supply										
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Line No.	Public Utility Basin # (1)	City Name	St.	Water Intake Source Name	Population Served 000's (2)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Low Flow (5)	Average Flow (6)	No. of Upstream Industrial Dischargers (7)
213	415	BURLINGTON	NC	TOMS C	40	0	0	0	0	0	0	0	0	0	0	0
214	415	BURLINGTON	NC	STONEY C	40	0	0	0	0	0	0	0	0	0	0	0
215	415	CHAPEL HILL	NC	PRICE C	25	0	0	0	0	0	0	0	0	0	0	0
216	415	CHAPEL HILL	NC	PHILS C	25	0	0	0	0	0	0	0	0	0	0	0
217	415	CHAPEL HILL	NC	MORGAN C	25	0	0	0	0	0	0	0	0	0	0	0
218	415	FAYETTEVILLE	NC	CAPE FEAR R	70	1/1	0	17/17	43	1/1	16	9/2	14	92	2.2	194
219	415	WILMINGTON	NC	CAPE FEAR R	50	3/3	3	22/15	46	1/1	16	22/5	29	22	1.5	263
220	425	DURHAM	NC	FLAT R	100	0	0	0	0	0	0	0	0	0	0	5
221	425	RALEIGH	NC	SWIFT C	130	0	0	0	0	0	0	0	0	0	0	0
222	425	RALEIGH	NC	NEUSE R	130	0	0	4/4	23	0	0	3/1	0	31	1.9	24
223	425	RALEIGH	NC	WALNUT C	130	0	0	0	0	0	0	0	0	0	0	0
224	425	WILSON	NC	SILVER LK	33	0	0	0	0	0	0	0	0	0	0	0
225	425	WILSON	NC	TOISNOT SWAMP	33	0	0	0	0	0	0	0	0	0	0	0
226	425	WILSON	NC	CONTENTNEA C	33	0	0	0	0	0	0	0	0	0	0	2
227	425	GOLDSBORO	NC	LITTLE R	30	0	0	0	0	0	0	0	0	0	0	7

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						Upstream Wastewater Sources Contained in Drinking Water Supply										
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228	430	GAINSVILLE	GA	LK SIDNEY	35	0	0	0	0	0	0	0	0	0	0	2
229	430	LAWRENCEVILLE	GA	CHATTAHOOCHEE R	56	0	0	1/1	4	0	0	1/1	0	.5	.2	9
230	430	DECATUR	GA	CHATTAHOOCHEE R	391	0	0	7/6	16	0	0	1/1	0	3.0	.6	16
231	430	ATLANTA	GA	CHATTAHOOCHEE R	650	0	0	7/6	16	0	0	1/1	0	3.0	.6	16
232	430	EAST POINT	GA	SWEET WATER C	40	0	0	0	0	0	0	0	0	0	0	0
233	430	DOUGLASVILLE	GA	ANNEEWAKEE C	35	0	0	0	0	0	0	0	0	0	0	0
234	430	LA GRANGE	GA	CHATTAHOOCHEE R	32	0	0	15/14	200	0	0	1/1	0	26	3.6	28
235	430	LANGDALE	AL	CHATTAHOOCHEE R	25	1/1	0	19/18	214	0	0	1/1	0	28	3.8	39
236	430	PHENIX CITY	AL	CHATTAHOOCHEE R	28	1/1	0	19/18	214	0	0	1/1	0	20	3.2	42
237	430	COLUMBUS	GA	LK OLIVER ON	134	1/1	0	19/18	214	0	0	1/1	0	20	3.2	42
238	430	GRIFFIN	GA	HEADS C RE	30	0	0	0	0	0	0	0	0	0	0	0
239	430	GRIFFIN	GA	FLINT R	30	0	0	0	0	0	0	0	0	0	0	2
240	435	ROCKY MOUNT	NC	TAR R	40	0	0	1/1	1	0	0	0	0	1.1	e	5
241	435	GREENVILLE	NC	TAR R	33	1/1	0	4/4	3	0	1	3/1	14	19	.8	35

TABLE 10. ESTIMATED EXTEND OF MUNICIPAL AND INDUSTRIAL DISCHARGES AT PUBLIC DRINKING WATER SUPPLY INTAKE POINTS

						Upstream Wastewater Sources Contained in Drinking Water Supply										
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Line No.	Public Utility Basin # (1)	City Name	St.	Water Intake Source Name	Population Served 000's (2)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discherged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Low Flow (5)	Average Flow (6)	No. of Upstream Industrial Dischargers (7)
242	440	ATHENS	GA	SANDY C	57	0	0	0	0	0	0	0	0	0	0	0
243	440	ATHENS	GA	N OCONEE R	57	0	0	0	0	0	0	0	0	0	0	0
244	440	MORROW	GA	L COTTON C	80	0	0	0	0	0	0	0	0	0	0	0
245	440	MACON	GA	OCMULGEE R	125	0	0	11/11	57	1/1	0	4/0	0	15	2.1	25
246	445	DANVILLE	VA	DAN R	52	0	0	6/5	7	0	0	6/2	4	2.5	.5	42
247	445	ROANOKE	VA	FALLING C RE	130	0	0	0	0	0	0	0	0	0	0	0
248	445	ROANOKE	VA	CARVINS COVE	130	0	0	0	0	0	0	0	0	0	0	0
249	450	ANDERSON	SC	LK HARTWELL	80	6/6	4	20/20	0	0	0	12/12	0	1.1	.1	92
250	450	AUGUSTA	GA	SAVANNAH R	125	10/6	4	26/26	6	0	0	24/5	6	.8	.2	163
251	460	AIKEN	SC	SHAWS C	28	0	0	0	0	0	0	0	0	0	0	1
252	460	AIKEN	SC	SHILOH SPRINGS	28	0	0	0	0	0	0	0	0	0	0	0
253	460	CHARLESTON	SC	EDISTO R	175	1/1	0	6/6	5	1/1	1	7/3	0	1.3	.2	48
254	460	ORANGEBURG	SC	NF EDISTO R	35	0	0	1/1	0	1/1	1	1/1	0	.4	.1	5
255	465	CHARLESTON	SC	GOOSE C	175	0	0	0	0	0	0	6/0	0	e	e	15

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256	470	GREENVILLE	SC	N SALUDA RE	27	0	0	0	0	0	0	0	0	0	0	0
257	470	GREENVILLE	SC	TABLE ROCK COVE	27	0	0	0	0	0	0	0	0	0	0	0
258	470	GREENWOOD	SC	LK GREENWOOD	29	1/1	0	24/23	151	0	0	0	0	0	0	0
259	470	COLUMBIA	SC	SALUDA R	228	2/2	0	34/23	439	0	0	8/3	0	73	7.7	110
260	470	SPARTANBURG	SC	S PACOLET R	120	0	0	1/1	0	1/1	16	15/6	2	351	16	153
										1/1	0	0	0	e	e	4
261	470	COLUMBIA	SC	BROAD R	228	8/8	17	45/44	52	2/1	0	47/7	13	8.3	1.3	348
262	470	HICKORY	NC	CATAWBA R	40	0	0	6/6	23	0	0	1/0	0	11	1.9	31
263	470	CHARLOTTE	NC	MT ISLAND LK	330	0	0	9/1	30	0	0	3/2	1	3.1	.5	48
264	470	GASTONIA	NC	LONG C	59	0	0	0	0	0	0	0	0	0	0	0
265	470	GASTONIA	NC	CATAWBA R	59	0	0	11/11	34	0	0	3/1	1	3.5	.6	56
266	470	ROCK HILL	SC	CATAWBA R	426	2/2	0	19/19	61	0	0	4/2	1	8.5	1.4	99
267	470	LANCASTER	SC	CATAWBA R	25	4/4	0	27/27	138	1/1	0	10/3	1	14	2.3	169
268	485	W. PALM BEACH	FL	LK MANGONIA	73	0	0	0	0	0	0	0	0	0	0	0
269	485	W. PALM BEACH	FL	LK OKEECHOBEE	73	0	0	4/4	1	0	0	2/0	0	.4	e	10
270	485	W. PALM BEACH	FL	CLEAR LK	73	0	0	0	0	0	0	0	0	0	0	0
271	490	JACKSON	MS	PEARL R	180	0	0	17/17	9	0	0	1/0	0	9.7	.3	55

TABLE 10. ESTIMATED EXTENT OF MUNICIPAL AND INDUSTRIAL DISCHARGES AT PUBLIC DRINKING WATER SUPPLY INTAKE POINTS

						Upstream Wastewater Sources Contained in Drinking Water Supply										
						Primary Effluent		Secondary Effluent		Tertiary Effluent		Unknown Effluent		% Wastewater @ Water Intake		
Line No.	Public Utility Basin # (1)	City Name	St.	Water Intake Source Name	Population Served 000's (2)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Low Flow (5)	Average Flow (6)	No. of Upstream Industrial Dischargers (7)
272	500	CLEVELAND	OH	L. ERIE CRIB 4	1800											
273	500	OSHKOSH	WI	L. WINNEBAGO	53	7/7	11	26/26	97	1/1	0	11/5	25	13	3.3	173
274	500	APPLETON	WI	L. WINNEBAGO	54	7/7	11	26/26	97	1/1	0	11/5	25	13	3.3	174
275	500	DULUTH	MN	LK SUPERIOR	114											
276	500	SUPERIOR	WI	LK SUPERIOR	32											
277	500	GREEN BAY	WI	LK MICHIGAN	88											
278	500	MANITOWOC	WI	LK MICHIGAN	33											
279	500	SHEBOYGAN	WI	LK MICHIGAN	48											
280	500	MILWAUKEE	WI	LK MICHIGAN	710											
281	500	RACINE	WI	LK MICHIGAN	95											
282	500	KENOSHA	WI	LK MICHIGAN	79											
283	500	WAUKEGAN	IL	LK MICHIGAN	65											
284	500	HIGHLAND	IL	LK MICHIGAN	33											
285	500	NORTHBROOK	IL	LK MICHIGAN	30											
286	500	WILMETTE	IL	LK MICHIGAN	34											

TABLE 10. ESTIMATED EXTENT OF MUNICIPAL AND INDUSTRIAL DISCHARGES AT PUBLIC DRINKING WATER SUPPLY INTAKE POINTS

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Line No.	Public Utility Basin # (1)	City Name	St.	Water Intake Source Name	Population Served 000's (2)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Low Flow (5)	Average Flow (6)	No. of Upstream Industrial Dischargers (7)
287	500	EVANSTON	IL	LK MICHIGAN	80											
288	500	CHICAGO	IL	LK MICHIGAN	4520											
289	500	HAMMOND	IN	LK MICHIGAN	108											
290	500	HAMMOND	IN	LK MICHIGAN	108											
291	500	E. CHICAGO	IN	LK MICHIGAN	47											
292	500	GARY	IN	LK MICHIGAN	250											
293	500	GARY	IN	LK MICHIGAN	250											
294	500	MICHIGAN CITY	IN	LK MICHIGAN	41											
295	500	GRAND RAPIDS	MI	LK MICHIGAN FILTRA	208											
296	500	MUSKEGON	MI	LK MICHIGAN	45											
297	500	MIDLAND	MI	LK HURON	35											
298	500	BAY CITY	MI	SAGINAW BAY LON	49											
299	500	SAGINAW	MI	LK HURON	92											
300	500	PORT HURON	MI	ST CLAIR R	36											
301	500	HIGHLAND PARK	MI	LK ST CLAIR	35											
302	500	WYOMING	MI	LK MICHIGAN	57											

TABLE 10. ESTIMATED EXTENT OF MUNICIPAL AND INDUSTRIAL DISCHARGES AT PUBLIC DRINKING WATER SUPPLY INTAKE POINTS

						Upstream Wastewater Sources Contained in Drinking Water Supply										
						Primary Effluent		Secondary Effluent		Tertiary Effluent		Unknown Effluent		% Wastewater @ Water Intake		
Line No.	Public Utility Basin # (1)	City Name	St.	Water Intake Source Name	Population Served 000's (2)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Low Flow (5)	Average Flow (6)	No. of Upstream Industrial Dischargers (7)
303	500	DETROIT	MI	DETROIT R	1490											
304	500	WYANDOTTE	MI	DETROIT R	41											
305	500	MONROE	MI	LK ERIE	35											
306	500	TOLEDO	OH	LK ERIE	455											
307	500	SANDUSKY	OH	LK ERIE	45											
308	500	LORAIN	OH	LK ERIE	85											
309	500	ELYRIA	OH	LK ERIE	90											
310	500	AVON LAKE	OH	LK ERIE	27											
311	500	CLEVELAND	OH	LK ERIE CRIB 3	1800											
312	500	MENTOR	OH	LK ERIE	50											
313	500	PAINESVILLE	OH	LK ERIE	25											
314	500	GENEVA	OH	LK ERIE	39											
315	500	ASHTABULA	OH	LK ERIE	39											
316	500	DUNKIRK	NY	LK ERIE	25											
317	500	BUFFALO	NY	LK ERIE	150											

TABLE 10. ESTIMATED EXTENT OF MUNICIPAL AND INDUSTRIAL DISCHARGES AT PUBLIC DRINKING WATER SUPPLY INTAKE POINTS

						Upstream Wastewater Sources Contained in Drinking Water Supply										
						Primary Effluent		Secondary Effluent		Tertiary Effluent		Unknown Effluent		% Wastewater @ Water Intake		
Line No.	Public Utility Basin # (1)	City Name	St.	Water Intake Source Name	Population Served 000's (2)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Low Flow (5)	Average Flow (6)	No. of Upstream Industrial Dischargers (7)
318	500	BUFFALO	NY	LK ERIE	400											
319	500	BUFFALO	NY	LK ERIE	500											
320	500	ROCHESTER	NY	LK ONTARIO	275											
321	500	ROCHESTER	NY	LK ONTARIO	120											
322	500	OSWEGO	NY	LK ONTARIO	25											
323	502	YPSILANTI	MI	HURON R	30	0	0	5/5	50	1/1	0	3/1	0	119	12.7	38
324	510	LIMA	OH	OTTAWA R	62	0	0	0	0	0	0	0	0	0	0	0
325	510	FINDLAY	OH	BLANCHARD R	40	0	0	0	0	0	0	0	0	0	0	1
326	510	FORT WAYNE	IN	ST. JOSEPH R	180	0	0	0	0	0	0	1/0	0	0	0	7
327	510	BOWLING GREEN	OH	MAUMEE R	26	2/2	0	44/44	105	3/3	20	91/15	1	170	2.8	380
328	610	LONGMONT	CO	ST VRAIN	25	0	0	1/1	0	0	0	0	0	e	e	10
329	610	BOULDER	CO	SILVER LK	80	0	0	0	0	0	0	0	0	0	0	0
330	610	BOULDER	CO	M BOULDER	80	0	0	1/1	0	0	0	1/0	0	e	e	7
331	610	ARVADA	CO	RALSTON RE	51	0	0	0	0	0	0	0	0	0	0	0
332	610	WESTMINSTER	CO	STANLEY LK	35	0	0	0	0	0	0	0	0	0	0	1

TABLE J. ESTIMATED EXTENT OF MUNICIPAL AND INDUSTRIAL DISCHARGES AT PUBLIC DRINKING WATER SUPPLY INTAKE POINTS

						Upstream Wastewater Sources Contained in Drinking Water Supply										
						Primary Effluent		Secondary Effluent		Tertiary Effluent		Unknown Effluent		% Wastewater @ Water Intake		
Line No.	Public Utility Basin # (1)	City Name	St.	Water Intake Source Name	Population Served 000's (2)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Low Flow (5)	Average Flow (6)	No. of Upstream Industrial Dischargers (7)
333	610	LAKEWOOD	CO	LENA GULCH	40	0	0	3/3	0	0	0	5/3	0	e	e	41
334	610	WESTMINSTER	CO	CLEAR C	35	0	0	9/6	3	0	0	5/3	0	150	3.2	54
335	610	THORNTON	CO	CLEAR C	60	0	0	10/10	4	0	0	5/3	0	130	4.5	63
336	610	CHEYENNE	WY	DOUGLAS RE	50	0	0	0	0	0	0	0	0	0	0	0
337	610	DENVER	CO	S. PLATTE R	766	0	0	1/1	0	0	0	0	0	e	e	7
338	610	AURORA	CO	S. PLATTE R	110	0	0	0	0	2/2	0	1/0	0	e	e	12
339	610	ENGLEWOOD	CO	S. PLATTE R	36	0	0	5/5	6	2/2	0	1/0	0	50	2.6	31
340	610	ENGLEWOOD	CO	BEAR C	36	0	0	3/3	0	0	0	4/0	0	e	e	15
341	610	FORT COLLINS	CO	HORSETOOTH RE	50	0	0	0	0	1/1	0	0	0	e	e	1
342	610	FORT COLLINS	CO	CACHE LA POUDRE	50	0	0	0	0	0	0	0	0	0	0	5
343	610	BUTTE	MT	BIG HOLE R	46	0	0	0	0	0	0	0	0	0	0	0
344	610	HELENA	MT	TEN MILE	250	0	0	0	0	0	0	0	0	0	0	0
345	610	HELENA	MT	MISSOURI R	250	0	0	10/10	17	0	0	0	0	1.3	.3	25
346	610	GREAT FALLS	MT	MISSOURI R	72	0	0	10/10	17	0	0	1/0	0	.5	.2	43
347	610	BISMARCK	ND	MISSOURI R	35	4/4	0	122/120	33	0	0	22/6	44	2.4	.3	231

TABLE 10. ESTIMATED EXTENT OF MUNICIPAL AND INDUSTRIAL DISCHARGES AT PUBLIC DRINKING WATER SUPPLY INTAKE POINTS

						Upstream Wastewater Sources Contained in Drinking Water Supply										
						Primary Effluent		Secondary Effluent		Tertiary Effluent		Unknown Effluent		% Wastewater @ Water Intake		
Line No.	Public Utility Basin # (1)	City Name	St.	Water Intake Source Name	Population Served 000's (2)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Low Flow (5)	Average Flow (6)	No. of Upstream Industrial Dischargers (7)
348	610	ABERDEEN	SD	ELM R AND	26	0	0	5/5	0	0	0	1/0	0	e	e	7
349	610	SIOUX CITY	IA	MISSOURI R	92	18/18	1	415/409	90	1/1	10	192/15	94	4.4	.6	1178
350	610	OMAHA	NE	MISSOURI R	350	19/19	1	438/432	93	1/1	10	244/19	124	5.2	.7	1342
351	610	COUNCIL BLUFFS	IA	MISSOURI R	60	19/19	1	438/432	93	1/1	10	244/19	124	5.2	.7	1342
352	610	CASPER	WY	N. PLATTE R	42	1/1	0	3/3	0	0	0	1/1	0	e	e	40
353	610	ST. JOSEPH	MO	MISSOURI R	89	23/23	10	544/544	346	10/10	20	343/27	124	11	1.3	2178
354	610	LEAVENWORTH	KS	MISSOURI R	30	25/25	56	544/544	346	10/10	20	353/27	124	12	1.0	2203
355	610	TOPEKA	KS	KANSAS R	150	5/5	9	35/34	47	1/1	3	162/3	0	15	1.1	571
356	610	LAWRENCE	KS	KANSAS R	50	5/5	9	41/40	69	1/1	3	177/3	0	21	1.2	626
357	610	MISSION	KS	KANSAS R	180	6/6	16	43/42	69	1/1	3	181/4	0	19	1.3	650
358	610	KANSAS CITY	KS	MISSOURI R	215	26/26	61	547/547	353	10/10	20	353/27	124	12	1.0	2213
359	610	KANSAS CITY	MO	MISSOURI R	750	32/32	148	590/589	422	11/11	23	534/31	124	14	1.2	2863
360	610	JEFFERSON CITY	MO	MISSOURI R	34	35/35	148	645/638	435	11/11	23	750/35	127	12	1.3	3575
361	610	FT. LEONARD WOOD	MO	BIG PINEY R	30	0	0	0	0	0	0	0	0	0	0	18
362	610	ST. LOUIS	MO	MISSOURI R	600	37/37	1158	678/671	442	11/11	23	883/35	127	12	1.3	4276

TABLE 10. ESTIMATED EXTENT OF MUNICIPAL AND INDUSTRIAL DISCHARGES AT PUBLIC DRINKING WATER SUPPLY INTAKE POINTS

Line No.	Public Utility Basin # (1)	City Name	St.	Water Intake Source Name	Population Served 000's (2)	Upstream Wastewater Sources Contained in Drinking Water Supply										
						Primary Effluent		Secondary Effluent		Tertiary Effluent		Unknown Effluent		% Wastewater @ Water Intake		No. of Upstream Industrial Dischargers (7)
						Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Low Flow (5)	Average Flow (6)	
363	610	ST. CHARLES	MO	MISSOURI R	70	37/37	158	678/671	442	11/11	23	883/35	127	12	1.3	4276
364	610	ST. CLOUD	MN	MISSISSIPPI R	40	1/1	0	18/18	3	0	0	7/4	4	10	.2	53
365	610	MINNEAPOLIS HENNEP	MN	MISSISSIPPI R	430	3/3	0	40/39	18	0	0	30/6	29	4.0	.6	174
366	610	ST. PAUL	MN	MISSISSIPPI R	371	3/3	0	40/39	18	0	0	31/7	32	3.5	.5	214
367	610	ST. PAUL	MN	RICE C CHAI	371	0	0	0	0	0	0	1/1	0	e	e	3
368	610	MOLINE	IL	MISSISSIPPI R	46	72/72	90	313/306	220	5/5	3	258/55	75	3.9	.8	1658
369	610	DAVENPORT	IA	MISSISSIPPI R	135	73/72	90	313/306	220	6/6	6	259/55	75	3.3	.6	1665
370	610	IOWA CITY	IA	IOWA R	49	0	0	9/9	6	0	0	33/1	0	8.8	.4	77
371	610	BURLINGTON	IA	MISSISSIPPI R	33	74/73	102	325/318	226	6/6	6	292/56	75	3.5	.7	1764
372	610	DES MOINES	IA	RACOON R	207	0	0	13/13	3	0	0	38/0	0	9.1	.2	75
373	610	OTTUMWA	IA	DES MOINES R	30	0	0	44/44	72	1/1	0	89/2	1	57	1.4	242
374	610	QUINCY	IL	MISSISSIPPI R	50	75/73	102	390/371	318	7/7	6	452/60	91	4.4	.8	2189
375	610	KANKAKEE	IL	KANKAKEE R	55	2/2	0	6/5	8	1/1	0	4/1	1	2.3	.5	21
376	610	PEORIA	IL	ILLINOIS R	163	8/8	2	120/115	2481	16/13	24	200/5	4	--	--	1057
377	610	BLOOMINGTON	IL	MONEY C	42	0	0	0	0	0	0	0	0	0	0	0

TABLE 10. ESTIMATED EXTENT OF MUNICIPAL AND INDUSTRIAL DISCHARGES AT PUBLIC DRINKING WATER SUPPLY INTAKE POINTS

						Upstream Wastewater Sources Contained in Drinking Water Supply										
						Primary Effluent		Secondary Effluent		Tertiary Effluent		Unknown Effluent		% Wastewater @ Water Intake		
Line No.	Public Utility Basin # (1)	City Name	St.	Water Intake Source Name	Population Served 000's (2)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Low Flow (5)	Average Flow (6)	No. of Upstream Industrial Dischargers (7)
378	610	DECATUR	IL	LK DECATUR	91	0	0	2/2	0	0	0	0	0	e	e	6
379	610	SPRINGFIELD	IL	LK SPRINGFIELD	97	0	0	1/1	0	0	0	0	0	e	e	1
380	610	ALTON	IL	MISSISSIPPI R	57	92/90	115	618/592	2952	26/23	32	851/67	95	15	3.2	4037
381	610	ST. LOUIS	MO	MISSISSIPPI R	600	129/127	273	1296/ 1263	3394	37/34	55	1721/ 102	222	10	2.2	8345
382	610	E ST. LOUIS	IL	MISSISSIPPI R	215	129/127	273	1296/ 1263	3394	37/34	55	1721/ 102	222	10	2.2	8345
383	610	KIRKWOOD	MO	MERAMEC R	45	0	0	11/11	2	0	0	26/0	0	.7	.1	153
384	610	CARBONDALE	IL	CEDAR CR RE	30	0	0	0	0	0	0	0	0	0	0	0
385	610	CAPE GIRARDEAU	MO	MISSISSIPPI R	34	137/135	477	1414/ 1377	3442	42/38	57	1902/ 105	222	9.3	2.1	9540
386	610	BUTLER	PA	ALLEGHENY R	32	1/1	0	28/27	23	0	0	21/7	0	3.1	.1	408
387	610	BUTLER	PA	ALLEGHENY R	36	0	0	0	0	0	0	0	0	0	0	0
388	610	JOHNSTOWN	PA	SANDY RUN DAM	25	0	0	0	0	0	0	0	0	0	0	0
389	610	JOHNSTOWN	PA	SALTLICK RE	110	0	0	0	0	0	0	0	0	0	0	0
390	610	JOHNSTOWN	PA	TOYLLDAL DAM	25	0	0	0	0	0	0	0	0	0	0	0
391	610	JOHNSTOWN	PA	MILLCREEK RE	110	0	0	0	0	0	0	0	0	0	0	0
392	610	JOHNSTOWN	PA	DALTON RUN RE	110	0	0	0	0	0	0	0	0	0	0	0

TABLE 10. ESTIMATED EXTENT OF MUNICIPAL AND INDUSTRIAL DISCHARGES AT PUBLIC DRINKING WATER SUPPLY INTAKE POINTS

						Upstream Wastewater Sources Contained in Drinking Water Supply										
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393	610	JOHNSTOWN	PA	BEAR ROCK DAM	25	0	0	0	0	0	0	0	0	0	0	0
394	610	JOHNSTOWN	PA	N FORK RE	110	0	0	0	0	0	0	0	0	0	0	0
395	610	NEW KENSINGTON	PA	ALLEGHENY R	50	7/7	55	45/43	123	3/3	3	51/13	0	15	.9	796
396	610	WILKINSBURG	PA	ALLEGHENY R	250	9/9	63	55/53	129	4/4	5	54/14	0	16	1.0	840
397	610	PITTSBURGH	PA	ALLEGHENY R	400	9/9	63	60/58	130	4/4	5	57/14	0	16	1.0	853
398	610	FAIRMONT	WV	TYGART VALLEY R	45	0	0	3/3	3	0	0	10/3	2	2.5	.2	152
399	610	MORGANTOWN	WV	COBUN C	45	0	0	0	0	0	0	1/1	0	e	e	18
400	610	MORGANTOWN	WV	MONONGAHELA R	45	3/3	0	6/6	4	0	0	16/4	2	2.1	.1	333
401	610	GERMAN TWP	PA	MONONGAHELA R	25	5/5	0	23/22	80	2/2	5	45/12	14	25	1.3	642
402	610	JEFFERSON	PA	S F TEN MILE R	33	0	0	0	0	0	0	0	0	0	0	0
403	610	JEFFERSON	PA	MONONGAHELA R	33	5/5	0	23/22	80	2/2	5	45/12	14	23	1.2	644
404	610	FREDERICKTOWN	PA	MONONGAHELA R	30	6/6	0	24/23	81	2/2	5	45/12	14	22	1.1	661
405	610	CHARLEROI	PA	MONONGAHELA R	60	10/10	0	29/28	81	3/3	10	48/13	14	23	1.2	696
406	610	UNIONTOWN	PA	R STATION Y	31	1/1	0	10/9	2	0	0	8/0	0	2.1	.1	99
407	610	UNIONTOWN	PA	YOUGHIOGHENY R	26	1/1	0	10/9	2	0	0	8/0	0	2.1	.1	99

TABLE 10. ESTIMATED EXTENT OF MUNICIPAL AND INDUSTRIAL DISCHARGES AT PUBLIC DRINKING WATER SUPPLY INTAKE POINTS

						Upstream Wastewater Sources Contained in Drinking Water Supply										
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Line No.	Public Utility Basin # (1)	City Name	St.	Water Intake Source Name	Population Served 000's (2)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Low Flow (5)	Average Flow (6)	No. of Upstream Industrial Dischargers (7)
408	610	GREENSBURG	PA	BEAVER RUN RE	162	0	0	0	0	0	0	0	0	0	0	0
409	610	GREENSBURG	PA	IMMEL RE	162	0	0	0	0	0	0	0	0	0	0	0
410	610	GREENSBURG	PA	INDIAN C	162	0	0	0	0	0	0	0	0	0	0	0
411	610	CONNELLSVILLE	PA	YOUGHIOGHENY R	26	1/1	0	10/9	2	0	0	8/0	0	2.1	.1	99
412	610	MCKEESPORT	PA	YOUGHIOGHENY R	38	1/1	0	10/9	2	0	0	8/0	0	1.0	.1	99
413	610	MCKEESPORT	PA	MONONGAHELA R	38	14/14	4	61/59	116	7/7	20	71/17	15	14	1.3	953
414	610	PITTSBURGH	PA	MONONGAHELA R	461	14/14	4	65/63	117	7/7	20	74/17	15	14	1.3	964
415	610	CANONSBURG	PA	JOHNSTONS RUN	25	0	0	0	0	0	0	0	0	0	0	0
416	610	CANONSBURG	PA	SPEERS RUN	25	0	0	0	0	0	0	0	0	0	0	0
417	610	CANONSBURG	PA	L CHARTIER	25	0	0	0	0	0	0	0	0	0	0	0
418	610	ALLIANCE	OH	DEER C RE	32	0	0	0	0	0	0	0	0	0	0	0
419	610	WARREN	OH	MOSQUITO C	80	0	0	0	0	0	0	0	0	0	0	1
420	610	STRUTHERS	OH	BURGESS LK	50	0	0	0	0	0	0	0	0	0	0	0
421	610	STRUTHERS	OH	EVANS LK	50	0	0	0	0	0	0	0	0	0	0	0
422	610	SHARON	PA	SHENANGO R	75	0	0	0	0	0	0	0	0	0	0	38

TABLE 10. ESTIMATED EXTENT OF MUNICIPAL AND INDUSTRIAL DISCHARGES AT PUBLIC DRINKING WATER SUPPLY INTAKE POINTS

						Upstream Wastewater Sources Contained in Drinking Water Supply										
						Primary Effluent		Secondary Effluent		Tertiary Effluent		Unknown Effluent		% Wastewater @ Water Intake		
Line No.	Public Utility Basin # (1)	City Name	St.	Water Intake Source Name	Population Served 000's (2)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Low Flow (5)	Average Flow (6)	No. of Upstream Industrial Dischargers (7)
423	610	NEW CASTLE	PA	SHENANGO R	60	0	0	4/4	6	0	0	2/1	0	6.9	.8	56
424	610	BUTLER	PA	ONEIDA-BOYDSTOWN	32	0	0	0	0	0	0	0	0	0	0	0
425	610	BUTLER	PA	THORN RUN RE	36	0	0	0	0	0	0	0	0	0	0	0
426	610	BUTLER	PA	THORN RUN RE	32	0	0	0	0	0	0	0	0	0	0	0
427	610	BUTLER	PA	CONNOQUENESSING R	36	0	0	2/2	0	0	0	0	0	e	e	3
428	610	BEAVER FALLS	PA	BEAVER R	60	1/1	29	18/16	22	1/1	0	7/3	2	--	1.5	191
429	610	E. LIVERPOOL	OH	OHIO R	30	35/34	113	174/167	668	13/13	28	174/39	56	9.0	1.1	2380
430	610	STEUBENVILLE	OH	OHIO R	40	37/36	113	174/167	668	13/13	28	177/40	59	9.0	1.1	2417
431	610	WHEELING	WV	OHIO R	65	37/36	113	176/169	668	13/13	28	180/42	60	9.0	1.1	2470
432	610	BARBERTON	OH	BARBERTON RE	37	0	0	0	0	0	0	0	0	0	0	0
433	610	MANSFIELD	OH	CLEAR F C RE	60	0	0	0	0	0	0	0	0	0	0	0
434	610	MASSILON	OH	NEWMAN C	60	0	0	0	0	0	0	0	0	0	0	0
435	610	BECKLEY	WV	GLADE C IMPOUND	60	0	0	0	0	0	0	2/0	0	e	e	4
436	610	CHARLESTON	WV	ELK R	170	0	0	1/1	0	0	0	9/2	0	e	e	77
437	610	HUNTINGTON	WV	OHIO R	74	45/44	120	202/194	679	13/13	28	274/62	80	9.4	1.2	3290
438	610	ASHLAND	KY	OHIO R	50	48/47	142	219/210	679	13/13	28	329/74	86	7.5	1.0	4398

TABLE 10. ESTIMATED EXTENT OF MUNICIPAL AND INDUSTRIAL DISCHARGES AT PUBLIC DRINKING WATER SUPPLY INTAKE POINTS

						Upstream Wastewater Sources Contained in Drinking Water Supply										
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Line No.	Public Utility Basin # (1)	City Name	St.	Water Intake Source Name	Population Served 000's (2)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Low Flow (5)	Average Flow (6)	No. of Upstream Industrial Dischargers (7)
439	610	PORTSMOUTH	OH	OHIO R	50	50/48	145	226/217	679	13/13	28	332/75	91	7.6	1.0	4474
440	610	MARION	OH	LITTLE SCIOTO	50	0	0	0	0	0	0	0	0	0	0	1
441	610	MARION	OH	BIG SCIOTO	50	0	0	0	0	0	0	0	0	0	0	2
442	610	COLUMBUS	OH	SCIOTO R	704	0	0	0	0	0	0	0	0	0	0	3
443	610	COLUMBUS	OH	BIG WALNUT C	704	0	0	0	0	0	0	0	0	0	0	2
444	610	FORT THOMAS	KY	OHIO R	100	62/60	151	284/269	919	16/14	28	389/81	129	18	1.3	4673
445	610	FORT THOMAS	KY	OHIO R	30	58/56	147	269/254	905	16/14	28	381/80	97	17	1.2	4732
446	610	RICHMOND	IN	WHITEWATER R	48	0	0	0	0	0	0	0	0	0	0	0
447	610	CINCINNATI	OH	OHIO R	850	58/56	147	272/257	912	16/14	28	382/81	129	18	1.3	4753
448	610	FT MITCHELL	KY	LICKING R	52	4/4	4	12/12	7	0	0	7/0	0	--	.3	120
449	610	LEXINGTON	KY	HICKMAN C	185	0	0	0	0	0	0	0	0	0	0	0
450	610	LEXINGTON	KY	KENTUCKY R	185	1/1	0	11/11	0	0	0	5/1	0	e	e	261
451	610	FRANKFORT	KY	KENTUCKY R	35	4/4	7	21/21	29	0	0	10/2	2	22	.5	326
452	610	GEORGETOWN	KY	EAGLE C	30	0	0	0	0	0	0	0	0	0	0	0
453	610	JEFFERSONVILLE	IN	OHIO R	42	74/71	389	323/305	975	16/14	28	453/88	133	24	1.3	5483

TABLE 10. ESTIMATED EXTENT OF MUNICIPAL AND INDUSTRIAL DISCHARGES AT PUBLIC DRINKING WATER SUPPLY INTAKE POINTS

						Upstream Wastewater Sources Contained in Drinking Water Supply										
						Primary Effluent		Secondary Effluent		Tertiary Effluent		Unknown Effluent		% Wastewater @ Water Intake		
Line No.	Public Utility Basin # (1)	City Name	St.	Water Intake Source Name	Population Served 000's (2)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Low Flow (5)	Average Flow (6)	No. of Upstream Industrial Dischargers (7)
454	610	LOUISVILLE	KY	OHIO R	700	75/72	390	331/313	988	16/14	28	457/88	133	24	1.4	5544
455	610	FT KNOX	KY	OTTER C	50	0	0	1/1	0	0	0	0	0	e	e	1
456	610	EVANSVILLE	IN	OHIO R	150	85/82	395	375/356	1132	16/14	28	606/95	142	19	1.2	6230
457	610	DANVILLE	IL	N F VERMILLION	44	0	0	0	0	0	0	0	0	0	0	1
458	610	KOKOMO	IN	WILD CAT CR	53	0	0	1/1	0	0	0	0	0	e	e	1
459	610	TERRE HAUTE	IN	WABASH R	77	6/5	0	78/71	145	6/2	0	80/1	0	15	1.4	492
460	610	MUNCIE	IN	WHITE R	87	0	0	3/3	0	0	0	0	0	e	e	6
461	610	MUNCIE	IN	PRAIRIE CR RE	87	0	0	0	0	0	0	0	0	0	0	0
462	610	MUNCIE	IN	BUCK CR	87	0	0	0	0	0	0	0	0	0	0	0
463	610	INDIANAPOLIS	IN	FALL CR	680	0	0	3/3	3	0	0	0	0	13	1.1	5
464	610	INDIANAPOLIS	IN	WHITE R	680	0	0	17/17	32	0	0	16/2	28	111	4.3	102
465	610	BLOOMINGTON	IN	BEAN BLOSSOM CR	43	0	0	0	0	0	0	0	0	0	0	2
466	610	BLOOMINGTON	IN	GRIFFY C	43	0	0	0	0	0	0	0	0	0	0	0
467	610	BLOOMINGTON	IN	MONROE RE	43	0	0	1/1	0	0	0	0	0	e	e	2
468	610	LOGICAL #4	KY	OHIO R	--	91/87	395	474/439	1312	22/16	28	702/103	170	--	--	6833
469	610	BOWLING GREEN	KY	BARREN R	36	0	0	6/6	3	0	0	4/2	0	4.5	.1	36

TABLE 10. ESTIMATED EXTENT OF MUNICIPAL AND INDUSTRIAL DISCHARGES AT PUBLIC DRINKING WATER SUPPLY INTAKE POINTS

						Upstream Wastewater Sources Contained in Drinking Water Supply										
						Primary Effluent		Secondary Effluent		Tertiary Effluent		Unknown Effluent		% Wastewater @ Water Intake		
Line No.	Public Utility Basin # (1)	City Name	St.	Water Intake Source Name	Population Served 000's (2)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Low Flow (5)	Average Flow (6)	No. of Upstream Industrial Dischargers (7)
470	610	MURFREESBORO	TN	STONES R	30	0	0	0	0	0	0	0	0	0	0	0
471	610	NASHVILLE	TN	CUMBERLAND R	368	4/4	1	38/36	18	2/2	10	18/7	2	4.7	.2	424
472	610	NASHVILLE	TN	CUMBERLAND R	40	4/4	1	38/36	18	2/2	10	18/7	2	4.7	.2	424
473	610	CLARKSVILLE	TN	CUMBERLAND R	47	4/4	1	42/40	122	7/7	18	26/9	18	9.0	.7	488
474	610	CLARKSVILLE	TN	BIG W F C	47	0	0	1/1	40	0	0	0	0	--	--	1
475	610	BRISTOL	TN	S HOLSTON	31	2/2	3	7/3	0	0	0	0	0	50	.3	29
476	610	JOHNSON CITY	TN	WATAGUA R	70	3/3	9	11/4	3	1/1	0	7/0	0	7.6	1.1	61
477	610	JOHNSON CITY	TN	PATRICK HENRY R	70	4/3	9	14/7	14	2/2	9	11/0	0	6.4	1.3	95
478	610	KINGSPORT	TN	S HOLSTON R	47	4/3	9	14/7	14	2/2	9	11/0	0	6.4	1.3	95
479	610	MORRISTOWN	TN	CHEROKEE LK	29	4/3	9	19/11	15	2/2	9	15/1	10	7.0	1.0	142
480	610	ASHEVILLE	NC	N F SWANNANOA R	115	0	0	0	0	0	0	0	0	0	0	0
481	610	HENDERSONVILLE	NC	MILLS R	25	0	0	0	0	0	0	0	0	0	0	0
482	610	KNOXVILLE	TN	TENNESSEE R	187	8/7	18	29/21	55	2/2	9	24/3	14	4.3	.7	287
483	610	MARYVILLE	TN	L RIVER	33	0	0	0	0	0	0	0	0	0	0	0
484	610	KNOXVILLE	TN	BEAVER C	30	0	0	2/2	13	0	0	0	0	--	16	6

TABLE 10. ESTIMATED EXTENT OF MUNICIPAL AND INDUSTRIAL DISCHARGES AT PUBLIC DRINKING WATER SUPPLY INTAKE POINTS

						Upstream Wastewater Sources Contained in Drinking Water Supply										
						Primary Effluent		Secondary Effluent		Tertiary Effluent		Unknown Effluent		% Wastewater @ Water Intake		
Line No.	Public Utility Basin # (1)	City Name	St.	Water Intake Source Name	Population Served 000's (2)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Low Flow (5)	Average Flow (6)	No. of Upstream Industrial Dischargers (7)
485	610	KNOXVILLE	TN	MELTON HILL RE	30	6/4	3	19/19	19	0	0	12/5	9	--	--	191
486	610	CLEVELAND	TN	HIWASEE R	40	0	0	1/1	0	0	0	4/2	0	e	e	27
487	610	CHATTANOOGA	TN	TENNESSEE R	183	19/16	22	65/55	156	4/4	12	58/15	26	3.5	.6	713
488	610	HUNTSVILLE	AL	TENNESSEE R	146	22/19	25	79/69	272	4/4	12	67/18	31	4.7	.8	836
489	610	DECATUR	AL	TENNESSEE R	40	23/20	30	90/79	322	4/4	12	67/18	31	5.5	.9	877
490	610	FLORENCE	AL	CYPRESS C	49	0	0	0	0	0	0	0	0	0	0	0
491	610	COLUMBIA	TN	DUCK R	34	0	0	4/4	3	0	0	0	0	9.1	.2	22
492	610	PADUCAH	KY	OHIO R	43	120/113	448	683/578	1829	37/27	58	823/137	246	8.6	1.0	8400
493	610	OKLAHOMA CITY	OK	HEFNER LK	35	0	0	0	0	0	0	0	0	0	0	0
494	610	COLORADO SPRINGS	CO	PIKES PEAK WATER	150	0	0	0	0	0	0	0	0	0	0	0
495	610	PUEBLO	CO	ARKANSAS R	95	1/1	0	17/17	52	2/2	2	12/0	0	135	7.6	74
496	610	WICHITA	KS	CHENEY RE	280	0	0	0	0	0	0	4/0	0	e	e	14
497	610	PONCA CITY	OK	LK PONCA	27	0	0	0	0	0	0	0	0	0	0	0
498	610	BARTLESVILLE	OK	HULAH LK	30	0	0	0	0	0	0	0	0	0	0	0
499	610	TULSA	OK	OOLAGAH LK	350	0	0	4/4	0	0	0	15/0	0	e	e	51

TABLE 10. ESTIMATED EXTENT OF MUNICIPAL AND INDUSTRIAL DISCHARGES AT PUBLIC DRINKING WATER SUPPLY INTAKE POINTS

						Upstream Wastewater Sources Contained in Drinking Water Supply										
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500	610	TULSA	OK	LK SPAVINAW	350	0	0	0	0	0	0	0	0	0	0	0
501	610	TULSA	OK	LK EUCHA	350	0	0	0	0	0	0	0	0	0	0	2
502	610	JOPLIN	MO	SHOAL C	45	0	0	1/1	1	0	0	8/0	0	2.4	.2	19
503	610	MUSKOGEE	OK	FT. GIBSON LK	37	0	0	31/30	14	0	0	54/0	0	20	.2	230
504	610	LOGICAL #2	OK	ARKANSAS R	--	1/1	0	52/51	66	2/2	2	81/0	0	0	0	341
505	610	DEL CITY	OK	LK THUNDERBIRD	27	0	0	0	0	0	0	0	0	0	0	0
506	610	LUBBOCK	TX	S CANADIAN R	149	0	0	0	0	0	0	0	0	0	0	0
507	610	MIDWEST CITY	OK	LK THUNDERBIRD	48	0	0	0	0	0	0	0	0	0	0	0
508	610	SHAWNEE	OK	SHAWNEE LK	25	0	0	0	0	0	0	0	0	0	0	0
509	610	OKLAHOMA CITY	OK	LK OVER HOLSER	50	2/2	0	15/15	2	0	0	21/2	0	--	1.9	167
510	610	LOGICAL #1	OK	ARKANSAS R	--	3/2	0	67/15	68	2/0	2	102/2	0	--	--	508
511	610	FORT SMITH	AR	LK FT. SMITH	63	0	0	0	0	0	0	0	0	0	0	0
512	610	LITTLE ROCK	AR	MAUMELLE LK	132	0	0	0	0	0	0	0	0	0	0	0
513	610	FAYETTEVILLE	AR	WHITE R	31	0	0	0	0	0	0	0	0	0	0	0
514	610	LOWELL	AR	BEAVER RE	75	0	0	1/1	12	1/1	0	5/1	0	200	.8	12
515	610	LITTLE ROCK	AR	LK WINONA	132	0	0	0	0	0	0	0	0	0	0	0
516	610	LAWTON	OK	LK LAWTONKA	74	0	0	0	0	0	0	0	0	0	0	0

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517	610	OKLAHOMA CITY	OK	STANLEY DRAPER LK	25	0	0	0	0	0	0	0	0	0	0	0
518	601	SHREVEPORT	LA	CROSS LK	193	0	0	0	0	0	0	0	0	0	0	0
519	610	TEXARKANA	TX	WRIGHT PATTMAN L	52	0	0	6/6	0	0	0	6/0	0	e	e	12
520	610	BOSSIER CITY	LA	RED RIVER	48	5/5	13	139/138	53	0	0	108/4	0	5.6	.3	482
521	610	HOT SPRINGS	AR	OUACHITA R	36	0	0	0	0	0	0	8/0	0	e	e	12
522	610	MONROE	LA	BAYOU DESIARD	62	0	0	0	0	0	0	3/0	0	e	e	8
523	610	METAIRIE	LA	MISSISSIPPI R	232	294/284	1001	2909/2757	6256	88/74	127	3115/279	537	--	1.7	20559
524	610	MARRERO	LA	MISSISSIPPI R	600	297/287	1027	2912/2760	6267	88/74	127	3718/279	537	--	1.8	20573
525	610	NEW ORLEANS	LA	MISSISSIPPI R	550	229/289	1034	2913/2761	6268	83/74	127	3718/279	537	--	1.8	20579
526	610	GRETNA	LA	MISSISSIPPI R	25	300/290	1076	2915/2763	6270	88/74	127	3724/280	548	--	1.8	20605
527	610	CHALMETTE	LA	MISSISSIPPI R	44	300/290	1076	2915/2763	6270	88/74	127	3725/280	548	--	1.8	20606
528	615	HOUSTON	TX	LK HOUSTON	1150	0	0	4/4	1	0	0	3/0	0	1.8	.1	7

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529	620	ALAMOGORDO	NM	BONITO LK	25	0	0	0	0	0	0	0	0	0	0	0
530	620	SANTE FE	NM	SANTE FE R	42	0	0	0	0	0	0	0	0	0	0	0
531	620	EL PASO	TX	RIO GRANDE R	354	0	0	1/0	0	0	0	0	0	e	e	1
532	620	LAREDO	TX	RIO GRANDE R	72	0	0	4/3	3	0	0	4/0	0	--	--	8
533	620	HARLINGEN	TX	RIO GRANDE R	34	0	0	5/3	3	0	0	4/0	0	--	--	9
534	620	BROWNSVILLE	TX	RIO GRANDE R	63	0	0	6/4	5	0	0	5/1	3	--	--	11
535	630	LOCKPORT	LA	BAYOU LAFOURCHE	50	2/2	3	0	0	0	0	5/0	0	--	--	39
536	640	FORT WORTH	TX	EAGLE MT RE	490	0	0	5/5	0	0	0	5/0	0	e	e	10
537	640	FORT WORTH	TX	CEDAR C LK	490	0	0	6/6	2	0	0	1/0	0	--	.5	8
538	640	FORT WORTH	TX	BEN BROOK LK	490	0	0	1/1	1	0	0	0	0	--	1.6	1
539	640	DALLAS	TX	LK RAY HUBBARD	878	0	0	9/9	7	1/1	28	2/0	0	219	2.8	12
540	640	DALLAS	TX	GRAPEVINE RE	878	0	0	2/2	0	0	0	1/0	0	e	e	3
541	640	DALLAS	TX	L ELM RE	878	1/1	2	13/13	2	0	0	5/0	0	67	.7	20
542	640	DALLAS	TX	TRINITY R	50	1/1	2	21/6	3	0	0	11/0	0	25	.3	34
543	640	GARLAND	TX	LK LAVON	112	0	0	6/6	0	0	0	2/0	0	e	e	8

TABLE 10. ESTIMATED EXTENT OF MUNICIPAL AND INDUSTRIAL DISCHARGES AT PUBLIC DRINKING WATER SUPPLY INTAKE POINTS

						Upstream Wastewater Sources Contained in Drinking Water Supply										
						Primary Effluent		Secondary Effluent		Tertiary Effluent		Unknown Effluent		% Wastewater @ Water Intake		
Line No.	Public Utility Basin # (1)	City Name	St.	Water Intake Source Name	Population Served 000's (2)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Low Flow (5)	Average Flow (6)	No. of Upstream Industrial Dischargers (7)
544	650	ABILENE	TX	LK FT. PHANTOM	95	0	0	0	0	0	0	0	0	0	0	0
545	650	ABILENE	TX	LK KIRBY	95	0	0	0	0	0	0	0	0	0	0	0
546	650	ABILENE	TX	LK ABILENE	95	0	0	0	0	0	0	0	0	0	0	0
547	650	TEMPLE	TX	BELTON LK	32	0	0	1/1	1	0	0	2/0	0	--	.1	6
548	650	NOLANVILLE	TX	BELTON LK	110	0	0	1/1	1	0	0	2/0	0	--	.1	6
549	650	BRYAN	TX	BRAZOS R	35	2/2	0	28/28	25	0	0	18/1	3	19	.6	52
550	660	CORPUS CHRISTI	TX	NEUCES R	204	0	0	9/9	2	0	0	3/0	0	8.3	.2	12
551	660	INGLESIDE	TX	NUECES R	30	0	0	14/14	28	0	0	5/1	2	130	3.5	19
552	670	SAN ANGELO	TX	COLORADO R	64	0	0	2/2	14	0	0	4/0	0	--	6.4	6
553	670	SAN ANGELO	TX	N CONCHO R	64	0	0	0	0	0	0	0	0	0	0	0
554	670	SAN ANGELO	TX	TWIN BUTTES RE	64	0	0	0	0	0	0	0	0	0	0	0
555	680	TYLER	TX	LK TYLER	58	0	0	0	0	0	0	1/0	0	e	e	1
556	840	MOOREHEAD	MN	RED R	30	2/1	0	16/16	4	1/0	0	1/1	0	25	.7	47
557	840	FARGO	ND	RED R	55	2/1	0	16/16	4	1/0	0	1/1	0	25	.7	47
558	840	FARGO	ND	SHEYANNE R	55	0	0	0	0	0	0	0	0	0	0	43
559	840	GRAND FORKS	ND	RED R #1	53	4/3	0	54/53	18	1/0	0	8/2	5	35	.9	177

TABLE 10. ESTIMATED EXTENT OF MUNICIPAL AND INDUSTRIAL DISCHARGES AT PUBLIC DRINKING WATER SUPPLY INTAKE POINTS

						Upstream Wastewater Sources Contained in Drinking Water Supply										
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Line No.	Public Utility Basin # (1)	City Name	St.	Water Intake Source Name	Population Served 000's (2)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Low Flow (5)	Average Flow (6)	No. of Upstream Industrial Dischargers (7)
560	910	CHEYENNE	WY	LITTLE SNAKE	50	0	0	0	0	0	0	0	0	0	0	0
561	910	DENVER	CO	WILLIAMS F RE	766	0	0	1/1	0	0	0	0	0	e	e	1
562	910	DENVER	CO	DILLON RE	766	0	0	2/2	1	0	0	0	0	.5	4.2	3
563	910	COLORADO SPRINGS	CO	DILLON RE	150	0	0	2/2	1	0	0	0	0	.5	4.2	3
564	910	N LAS VEGAS	NV	LK MEAD	40	0	0	9/9	0	1/1	0	9/2	76	--	.6	71
565	910	LAS VEGAS	NV	LK MEAD	250	0	0	9/9	0	1/1	0	9/2	76	--	.6	71
566	910	LOS ANGELES	CA	COLORADO R	410	1/1	0	10/10	1	1/1	0	9/2	76	--	.6	82
567	910	YUMA	AZ	AMERICAN CA	42	1/1	0	10/10	1	1/1	0	10/2	76	75	.7	90
568	910	PHOENIX	AZ	SALT AND VERDE	773	0	0	0	0	0	0	0	0	0	0	0
569	910	TEMPE	AZ	LK	98	0	0	5/5	3	0	0	23/0	0	50	.2	46
570	910	PHOENIX	AZ	SALT R PROJECT	800	0	0	5/5	3	0	0	23/0	0	50	.2	46
571	912	PALM SPRINGS	CA	SNOW AND FALL C	33	0	0	0	0	0	0	0	0	0	0	0
572	914	RENO	NV	TRUCKEE R	113	0	0	1/1	1	1/1	1	3/0	0	5.4	.3	6
573	914	RENO	NV	STEAMBOAT D	113	0	0	0	0	0	0	0	0	0	0	0

TABLE 10. ESTIMATED EXTENT OF MUNICIPAL AND INDUSTRIAL DISCHARGES AT PUBLIC DRINKING WATER SUPPLY INTAKE POINTS

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574	955	SANTA CRUZ	CA	NEWELL C	52	0	0	0	0	0	0	0	0	0	0	0
575	955	SANTA CRUZ	CA	SAN LORENZO R	52	0	0	0	0	0	0	0	0	0	0	1
576	980	REDLANDS	CA	MILL C	40	0	0	0	0	0	0	0	0	0	0	0
577	980	FONTANA	CA	LYTLE C	52	0	0	0	0	0	0	0	0	0	0	1
578	980	PALM SPRINGS	CA	CHINO C	33	0	0	5/5	59	2/2	18	4/1	3	--	67	37
579	980	MONROVIA	CA	MONROVIA AND SA	31	0	0	5/5	59	2/2	18	4/1	3	--	67	38
580	990	SACREMENTO	CA	AMERICAN R	272	1/1	1	5/5	6	0	0	8/0	0	10	.2	30
581	990	SACREMENTO	CA	SACREMENTO R	272	1/1	1	15/15	17	0	0	18/0	0	.3	.1	97
582	990	FAIRFIELD	CA	CACHE SL	36	0	0	0	0	0	0	0	0	0	0	0
583	990	VALLEJO	CA	CACHE SL	117	0	0	0	0	0	0	0	0	0	0	0
584	990	OAKLAND	CA	PARDEE R	98	0	0	0	0	0	0	1/0	0	e	e	2
585	990	HAYWARD	CA	S BAY AQUEDUCT	106	6/6	82	20/20	147	0	0	23/2	29	--	--	155
586	990	FREMONT	CA	S BAY AQUEDUCT	167	6/6	82	20/20	147	0	0	23/2	29	--	--	155
587	995	VALLEJO	CA	PUTAH S CA	117	0	0	1/1	0	0	0	4/0	0	e	e	10
588	995	FAIRFIELD	CA	PUTAH S CA	36	0	0	1/1	0	0	0	4/0	0	e	e	10

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589	777	MCALLEN	TX	RAW WATER SUPPL	38					SOURCE WATER UNIDENTIFIABLE						
590	777	ALICE	TX	TERMINAL RESERV	28											
591	777	NEWPORT	RI	LANTON VALLEY R	62											
592	777	PAWTUCKET	RI	HAPPY HOLLOW IN	109											
593	777	NEWPORT	RI	ST MARYS POND	62											
594	777	WOONSOCKET	RI	CROOK FALL BK	49											
595	777	WESTFIELD	MA	MONTGOMERY RE	30											
596	777	PITTSFIELD	MA	WILL BK RE	57											
597	777	MARLBOROUGH	MA	MILLHAM BK RE	30											
598	777	MARLBOROUGH	MA	LK WILLIAMS RE	30											
599	777	HOLYOKE	MA	SHITING ST RE	49											
600	777	HOLYOKE	MA	HUGH MCLEAN RE	49											
601	777	HINGHAM	MA	FULLING MILL P	29											
602	777	LEOMINSTER	MA	DISTRIBUTING RE	34											
603	777	HENDERSONVILLE	NC		25											
604	777	BRAINTREE	MA	RICHARDS RE-C	37											
605	777	BEVERLY	MA	LONGHAM RE	40											
606	777	DANVERS	MA	EMERSON P	27											

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607	777	FALL RIVER	MA	NOQUOCHOKE RE	105											
608	777	DANVERS	MA	SWAN P	27											
609	777	FITCHBURG	MA	MEETING HOUSE P	43											
610	777	FALL RIVER	MA	COPICUT RE	105											
611	777	PAMONA	CA	SUFACE WATER	87											
612	777	PASADENA	CA	ARROYO SERO	137											
613	777	PACIFICA	CA	SAN PEDRO C	37											
614	777	CONCORD	CA	MALLARD SL	150					SOURCE WATER UNIDENTIFIABLE						
615	777	ANTIOCH	CA	SAN JUAGUIN R	32											
616	777	CLINTON	CT	KELSEYTOWN RE	43											
617	777	HARTFORD	CT	COLDBROOK RE-E	391											
618	777	NORWALK	CT	CRYSTAL LK	40											
619	777	NORWALK	CT	POPES P	40											
620	777	NORWALK	CT	CITY LK	40											
621	777	NEW HAVEN	CT	STREAM	371											
622	777	MIDDLETOWN	CT	LAUREL BK	34											
623	777	MIDDLETOWN	CT	MT. HIGBY RE	34											
624	777	FORT SMITH	AR	SHEPARD SPRINGS	63											

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625	015	MOUNT VERNON	WA	SKAGIT R	31											
626	025	HILO.	HI	LAUOLI FALLS	27											
627	025	HILO	HI	PUKA MAUI INTAKE	27											
628	025	HILO	HI	KAHOAMA ST	27											
629	040	COOS BAY	OR	PONY C	30											
630	050	TACOMA	WA	GREEN R	175					PUBLIC UTILITY BASINS WITH ZERO DISCHARGE						
631	060	SEATTLE	WA	CEDAR R RE	922											
632	070	SEATTLE	WA	TOLT R	922											
633	070	EVERETT	WA	SULTAN R	150											
634	080	BELLINGHAM	WA	WHATCOM LK	42											
635	090	BREMERTON	WA	UNION R	49											
636	100	BANGOR	ME	FLOODS P	40											
637	101	ANSONIA	CT	FOUNTAIN LK	34											
638	102	ANSONIA	CT	MIDDLE RE	34											

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639	103	ANSONIA	CT	BUNGAY RE	34											
640	104	ANSONIA	CT	QUILLINAN RE	34											
641	105	SALEM	NH	CANOBIE LK	27											
642	106	BRIDGEPORT	CT	EASTON RE	336											
643	107	BRIDGEPORT	CT	HEMLOCKS RE	336											
644	108	BRIDGEPORT	CT	TRAP FALLS RE	336											
645	109	BRIDGEPORT	CT	SHELTON RE #2	336											
646	111	BRISTOL	CT	BRISTOL RE	54											
647	112	DANBURY	CT	MARGERIE RE	56											
648	113	DANBURY	CT	WEST LK	36											
649	114	DANBURY	CT	E LK RE	36											
650	115	GREENWICH	CT	PUTNAM RE	56											
651	116	GREENWICH	CT	MIANUS MILL P	56											
652	117	GROTON	CT	GROTON RE	31											
653	118	GROTON	CT	POQUONNOCK RE	31											

PUBLIC UTILITY BASINS
WITH ZERO DISCHARGE

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654	119	HARTFORD	CT	BARKHAMSTED RE	391											
655	120	WATERVILLE	ME	CHINA LK	28											
656	121	HARTFORD	CT	NEPAUG RE	391											
657	122	HARTFORD	CT	W. HARTFORD RE	391											
658	123	MANCHESTER	CT	PORTER RE	33											
659	124	MANCHESTER	CT	HOWARD RE	33											
660	125	MANCHESTER	CT	BUCKINGHAM RE	33					PUBLIC UTILITY BASINS WITH ZERO DISCHARGE						
661	126	MANCHESTER	CT	GLOBE HOLLOW RE	33											
662	127	MERIDEN	CT	BROAD BK RE	58											
663	128	MERIDEN	CT	ELMERE RE	58											
664	129	MERIDEN	CT	MERIMERE RE	58											
665	130	LEWISTON	ME	LK AUBURN	43											
666	131	MERIDEN	CT	BRADLEY HUBBARD	58											
667	132	NEW BRITAIN	CT	SHUTTLE MEADOW	99											
668	133	NEW BRITAIN	CT	WASEL RE	99											

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669	134	NEW BRITAIN	CT	WHIGVILLE RE	99											
670	135	NEW HAVEN	CT	LK SALTONSTAL	371											
671	136	NEW HAVEN	CT	FARM RIVER DIVE	371											
672	137	NEW HAVEN	CT	LK WHITNEY	371											
673	138	NEW HAVEN	CT	MALTBY LKS	371											
674	139	NEW LONDON	CT	LK KONOMOC	33											
675	141	NEW LONDON	CT	BECKWITH P	33											
676	142	NORWALK	CT	ROCK LK	40					PUBLIC UTILITY BASINS WITH ZERO DISCHARGE						
677	143	NORWALK	CT	GRUPE RE	40											
678	144	NORWICH	CT	FAIRVIEW RE	45											
679	145	NORWICH	CT	STONY BK RE	45											
680	146	SOUTHINGTON	CT	RE #1	27											
681	147	STAMFORD	CT	N STAMFORD	84											
682	148	STAMFORD	CT	LAUREL RE	84											
683	149	WALLINGFORD	CT	MACKENSIE RE	34											

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684	151	WALLINGFORD	CT	PISTAPAUG P	34											
685	152	WATERBURY	CT	WIGWAM RE	124											
686	153	WATERBURY	CT	MORRIS RE	124											
687	154	WATERBURY	CT	E MOUNTAIN RE	124											
688	155	NORWICH	CT	DEEP R RE	45											
689	156	WATERBURY	CT	PROSPECT RE	124											
690	160	WESTFIELD	MA	GRANVILLE RE	30											
691	160	WEST SPRINGFIELD	MA	BEAR HOLE BK	26											
692	160	AMHERST	MA	AMETHYST BK	35											
693	160	CHICOPEE	MA	QUABBIN RE	66											
694	161	BRISTOL	RI	KICKAMUIT RE	44											
695	162	PROVIDENCE	RI	PAWTUXET R	284											
696	162	WOONSOCKET	RI	MILL R	49											
697	170	MANCHESTER	NH	MASSABESIC LK	105											
698	190	PORTSMOUTH	NH	BELLAMY R	40											

PUBLIC UTILITY BASINS
WITH ZERO DISCHARGE

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699	202	BROCKTON	MA	AVON RE	89												
700	204	BROCKTON	MA	SILVER LK	89												
701	205	AMHERST	MA	ATKINS P	35												
702	206	DANVERS	MA	MIDDLETON P	27												
703	208	FALL R	MA	N WATUPPA	105												
704	210	ATLANTIC CITY	NJ	DOUGHTY P	48												
705	214	LEOMINSTER	MA	WACHUSETT RE	34												
706	216	GLOUCESTER	MA	BABSON RE	27												
707	218	GLOUCESTER	MA	HASKELL RE	27												
708	220	ORANGE	NJ	W B RAHWAY	33												
709	222	GLOUCESTER	MA	WALLACE RE	27												
710	224	HINGHAM	MA	ACCORD BK	29												
711	224	HINGHAM	MA	ACCORD P	29												

PUBLIC UTILITY BASINS
WITH ZERO DISCHARGE

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						Upstream Wastewater Sources Contained in Drinking Water Supply										
						Primary Effluent		Secondary Effluent		Tertiary Effluent		Unknown Effluent		% Wastewater @ Water Intake		
Line No.	Public Utility Basin # (1)	City Name	St.	Water Intake Source Name	Population Served 000's (2)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Low Flow (5)	Average Flow (6)	No. of Upstream Industrial Dischargers (7)
712	225	TONAWANDA	NY	W B NIAGARA R	110											
713	225	N. TONAWANDA	NY	NIAGARA R	110											
714	225	NIAGARA FALLS	NY	W B NIAGARA R	110											
715	225	LOCKPORT	NY	NIAGARA R	110											
716	228	SYRACUSE	NY	OTISCO LK	150											
717	232	PLATTSBURG	NY	MEADE & WEST B	25											
718	232	S BURLINGTON	VT	LK CHAMPLAIN	25											
719	232	BURLINGTON	VT	LK CHAMPLAIN	45											
720	234	ROCHESTER	NY	HEMLOCK & CANADAIGUA LKS	120											
721	236	HOLYOKE	MA	WRIGHT & ASHLEY	49											
722	237	SYRACUSE	NY	SKANEATELES LK	225											
723	238	MAMARONECK	NY	MAMARONECK R	60											
724	239	WHITE PLAINS	NY	2 RE	50											

PUBLIC UTILITY BASINS
WITH ZERO DISCHARGE

TABLE 10. ESTIMATED EXTENT OF MUNICIPAL AND INDUSTRIAL DISCHARGES AT PUBLIC DRINKING WATER SUPPLY INTAKE POINTS

						Upstream Wastewater Sources Contained in Drinking Water Supply										
						Primary Effluent		Secondary Effluent		Tertiary Effluent		Unknown Effluent		% Wastewater @ Water Intake		
Line No.	Public Utility Basin # (1)	City Name	St.	Water Intake Source Name	Population Served 000's (2)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Low Flow (5)	Average Flow (6)	No. of Upstream Industrial Dischargers (7)
725	242	LEOMINSTER	MA	FALL BK RES	34											
726	244	LYNN	MA	WALDEN P	90											
727	245	BEVERLY	MA	PUTNAMVILLE RE	40											
728	246	LYNN	MA	HAWKES P	90											
729	248	LYNN	MA	BIRCH P	90											
730	252	LYNN	MA	BREEDS P	90					PUBLIC UTILITY BASINS WITH ZERO DISCHARGE						
731	254	NEW BEDFORD	MA	GREAT QUITTICAS	102											
732	254	NEW BEDFORD	MA	LITTLE QUITTICAS	102											
733	254	NEW BEDFORD	MA	ASSAWOMPSET P	102											
734	255	BEVERLY	MA	WENHAM LK	40											
735	256	PEABODY	MA	SPRING P	50											
736	258	PEABODY	MA	SUNTAUG LK	50											
737	260	MORRISTOWN	NJ	CLYDE POTTS RE	55											
738	262	PLYMOUTH	MA	L SOUTH P	26											
739	264	PLYMOUTH	MA	GREAT SOUTH P	26											

TABLE 10. ESTIMATED EXTENT OF MUNICIPAL AND INDUSTRIAL DISCHARGES AT PUBLIC DRINKING WATER SUPPLY INTAKE POINTS

						Upstream Wastewater Sources Contained in Drinking Water Supply										
						Primary Effluent		Secondary Effluent		Tertiary Effluent		Unknown Effluent		% Wastewater @ Water Intake		
Line No.	Public Utility Basin # (1)	City Name	St.	Water Intake Source Name	Population Served 000's (2)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Low Flow (5)	Average Flow (5)	No. of Upstream Industrial Dischargers (7)
740	265	RANDOLPH	MA	GREAT P	27											
741	265	WEYMOUTH	MA	GREAT P	55											
742	265	BRAINTREE	MA	GREAT P	37											
743	266	PLYMOUTH	MA	ROOT P	26											
744	268	SPRINGFIELD	MA	LITTLEVILLE RE	169											
745	270	NEW MILFORD	NJ	LK DEFOREST	800					PUBLIC UTILITY BASINS WITH ZERO DISCHARGE						
746	270	SPRING VALLEY	NY	2 DEFOREST LK	192											
747	272	SPRINGFIELD	MA	COBBLE MT RE	169											
748	274	SPRINGFIELD	MA	LUDLOW RE	169											
749	275	BRAINTREE	MA	BLUE HILL R	37											
750	276	WAKEFIELD	MA	CRYSTAL LK	26											
751	278	WESTFIELD	MA	TEKOA RE	30											

TABLE 10. ESTIMATED EXTENT OF MUNICIPAL AND INDUSTRIAL DISCHARGES AT PUBLIC DRINKING WATER SUPPLY INTAKE POINTS

						Upstream Wastewater Sources Contained in Drinking Water Supply										
						Primary Effluent		Secondary Effluent		Tertiary Effluent		Unknown Effluent		% Wastewater @ Water Intake		
Line No.	Public Utility Basin # (1)	City Name	St.	Water Intake Source Name	Population Served 000's (2)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Low Flow (5)	Average Flow (6)	No. of Upstream Industrial Dischargers (7)
752	280	JERSEY CITY	NJ	BOONTON RE	630											
753	281	JERSEY CITY	NJ	SPLIT ROCK RE	800											
754	282	WORCESTER	MA	PINE HILL RE	177											
755	285	BROCKTON	MA	FURNACE & OLDHAM P	89											
756	286	WEYMOUTH	MA	SWAMP R DIV	55											
757	290	PITTSFIELD	MA	ASHLEY BK R	57											
758	290	PITTSFIELD	MA	ROARING BK	57					PUBLIC UTILITY BASINS WITH ZERO DISCHARGE						
759	290	PITTSFIELD	MA	SACKETT BK	57											
760	295	BROCKTON	MA	MONPONSETT P	89											
761	420	MOBILE	AL	BIG C	200											
762	421	PRICHARD	AL	EIGHT MILE C	51											
763	455	WILMINGTON	NC	TOOMERS C	50											
764	475	MELBOURNE	FL	LK WASHINGTON	100											
765	480	MERIDIAN	MS	BONITA	48											
766	480	MERIDIAN	MS	LONG C												
767	495	BRADENTON	FL	WARD LK	20											

TABLE 10. ESTIMATED EXTENT OF MUNICIPAL AND INDUSTRIAL DISCHARGES AT PUBLIC DRINKING WATER SUPPLY INTAKE POINTS

						Upstream Wastewater Sources Contained in Drinking Water Supply										
						Primary Effluent		Secondary Effluent		Tertiary Effluent		Unknown Effluent		% Wastewater @ Water Intake		
Line No.	Public Utility Basin # (1)	City Name	St.	Water Intake Source Name	Population Served 000's (2)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Low Flow (5)	Average Flow (6)	No. of Upstream Industrial Dischargers (7)
780	902	LOS ANGELES	CA	OWENS VALLEY AQD	2880	PUBLIC UTILITY BASINS WITH ZERO DISCHARGE										
781	904	OAKLAND	CA	SAN PABLO RE	98											
782	905	SAN DIEGO	CA	OTAY RE	773											
783	906	OAKLAND	CA	CHABOT RE	98											
784	906	OAKLAND	CA	UP SAN LEANDRO RE	98											
785	915	SAN JOSE	CA	BEAR BULCH RE	56											
786	920	MILLBRAE	CA	CRYSTAL SPRINGS	740											
787	920	MILLBRAE	CA	SAN ANDREAS RE	740											
788	925	SAN LUIS OBISPO	CA	SANTA MARGARITA	34											
789	930	MILLBRAE	CA	CALAVERAS RE	740											
790	935	SAN LUIS OBISPO	CA	WHALE ROCK RE	34											
791	940	CORTE MADERA	CA	KENT RE	180											
792	940	CORTE MADERA	CA	ALPINE RE	180											
793	940	CORTE MADERA	CA	BON TEMPE RE	180											

TABLE 10. ESTIMATED EXTENT OF MUNICIPAL AND INDUSTRIAL DISCHARGES AT PUBLIC DRINKING WATER SUPPLY INTAKE POINTS

						Upstream Wastewater Sources Contained in Drinking Water Supply										
						Primary Effluent		Secondary Effluent		Tertiary Effluent		Unknown Effluent		% Wastewater @ Water Intake		
Line No.	Public Utility Basin # (1)	City Name	St.	Water Intake Source Name	Population Served 000's (2)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Number of Dischargers N/n (3)	Avg. Flow Discharged cfs (4)	Low Flow (5)	Average Flow (6)	No. of Upstream Industrial Dischargers (7)
794	945	SANTA BARBARA	CA	GIBRALTOR RE	73	PUBLIC UTILITY BASINS WITH ZERO DISCHARGE										
795	945	SANTA BARBARA	CA	CACHUMA RE	73											
796	949	PETALUMA	CA	LAWLER RE	33											
797	950	CORTE MADERA	CA	NICASIO RE	180											
798	956	WATSONVILLE	CA	2 STREAMS IN BR	28											
799	960	MONTEREY	CA	CARMEL R	88											
800	965	VALLEJO	CA	LK CURRY	117											
801	970	NAPA	CA	MILLIKEN RE	49											
802	970	NAPA	CA	LK HENNESSEY	49											
803	975	VENTURA	CA	VENTURA R	62											
804	985	ESCONDIDO	CA	LK HENSHAW	53											

Footnotes

1. A Public Utility Basin is a special river basin construct used in this study as an aggregate of the USGS River Basins. See text for additional information.
2. Retail population served by a utility as indicated on the IPWS file from the U.S. EPA.
3. "N" indicates the total number of municipal dischargers counted for this category. "n" indicates the number of municipal dischargers for which flow data is available.
4. Yearly average of effluent discharge as indicated by the NEEDS Survey or MWFI of EPA.
5. Total discharge flow divided by 7-day, 10-year low flow as indicated by nearest USGS gaging station. The number e is a value less than .05%.
6. Total discharge flow divided by average flow as indicated by nearest USGS gaging station. The number e is a value less than .05%.
7. Total number of industrial and municipal dischargers.

TABLE 11. UPSTREAM/DOWNSTREAM INDEXING OF WASTEWATER

PUB	UTILITY NAME(line number)	UPSTREAM UTILITIES
020	CORVALLIS(13)	EUGENE(12), CORVALLIS(14-16)
	RICHLAND(5)	BUTTE(2)(3), MONTANA(4)
180	FITCHBURG(29)	WORCESTER(25)
	LAWRENCE(24)	LOWELL(23)
	-LOWELL(23)	FITCHBURG(29), CONCORD(22), PENNICHUCK(21)
215	BEVERLY(33)	PEABODY(32)
230	POUGHKEEPSIE(47)	ALBANY(45,46), TROY(43), KINGSTON(44), LATHAM(42)
	-LATHAM(42)	UTICA(39), AMSTERDAM(40)
	--UTICA(39)	UTICA(38)
240	PASSAIC VALLEY(55)	COMMONWEALTH(54), NEWARK(56)
310	BALTIMORE(124)	CHESTER(122)
	-CHESTER(122)	LANCASTER(120)
	--LANCASTER(120)	YORK(117), RIVERTON(109,110), HANOVER(118), DAUPHIN(114), HARRISBURG(108)
	---YORK(117)	HONOVER BORO(116)
	---DAUPHIN(114)	LEBANON(111,112,113)
	---HARRISBURG(108)	LOGICAL 3(104), DAUPHIN(106,107), KEYSTONE(89-91), ROARING CK(92-95), PENN. GAS & WATER(74-85), PA GAS & WATER(62-73), BINGHAMPTON(60), ELMIRA(61)
	----LOGICAL 3(104)	LEWISTOWN(101-105), ALTOONA(96-99), HUNTINGTON(100)
	----KEYSTONE(89)	WILLIAMSPORT(86-88)

PUB	UTILITY NAME(line number)	UPSTREAM UTILITIES
320	SOMERVILLE(168)	SOMERVILLE(166)
	-SOMERVILLE(166)	ELIZABETHTOWN(162)
	MIDDLESEX(164)	SOMERVILLE(166)
	WILMINGTON SUBURBAN(159)	WILMINGTON(157)
	PHILADELPHIA(153,155)	NORRISTOWN(152), PHILADELPHIA SUBURB(150)
	-NORRISTOWN(152)	POTTSTOWN(148), PHILADELPHIA SUBURB(149,151)
	--POTTSTOWN(148)	READING(142,143), SCHUYKILL CO MUN.(145-147)
	PHILADELPHIA(154)	BENSALEM(141)
	-BENSALEM(141)	BRISTOL(139), PHILADELPHIA SUBURB(140)
	--BRISTOL(139)	LOWER BUCKS(138)
	---LOWER BUCKS(138)	TRENTON(137)
	----TRENTON(137)	EASTON(126), BETHLEHEM(135,136), NORTHAMPTON(132,133)
	-----EASTON(126)	NEW YORK(125)
	-----BETHLEHEM(135)	BETHLEHEM(134)
	-----NORTHAMPTON(132)	HAZLETON(127-130), ALLENTOWN(131)
	--PHILADELPHIA SUBURB(140)	PHILADELPHIA SUBURB(149)
350	WASHINGTON SUBRBN. SANIT.(178)	FREDERICK(175,176), FAIRFAX(177), HAGERSTOWN(174)
	-HAGERSTOWN(174)	CUMBERLAND(173)
360	APPOMATTOX R(182)	VIRGINIA-AMERICAN(181)
	-VIRGINIA-AMERICAN(181)	CHESTERFIELD(179)
370	RICHMOND(188)	LYNCHBURG(184), CHESTERFIELD(189), CHARLOTTSVILLE(185-187)
	-LYNCHBURG(184)	LYNCHBURG(183)
405	SALISBURY(197)	N. DAVIDSON(195), STATESVILLE(191,192)
	-N. DAVIDSON(195)	WINSTON-SALEM(193,194)
410	GADSDEN(204)	ROME(202)
	-ROME(202)	DALTON(200-201)

PUB	UTILITY NAME(line number)	UPSTREAM UTILITIES
415	WILMINGTON(219)	FAYETTVILLE(415)
	-FAYETTVILLE(415)	BURLINGTON(213,214), HIGH POINT(209), GREENSBORO TOWNSEND(210), CHAPEL HILL(215-217)
	--GREENSBORO TOWNSEND(210)	GREENSBORO MITCHELL(212,211)
425	RALEIGH-JOHNSON(222)	RALEIGH-BAIN(223), DURHAM(220)
430	COLUMBUS(237)	PHENIX(236)
	-PHENIX(236)	W. PT. PEPPERILL(235)
	--W. PT. PEPPERILL(235)	LAGRANGE(234)
	---LAGRANGE(234)	ATLANTA(231), DOUGLAS CO(233), E. POINT(232)
	----ATLANTA(231)	DEKALB CO(230)
	-----DEKALB CO(230)	GWINETT CO(229)
	------GWINETT CO(229)	GAINSEVILLE(228)
440	MACON(245)	CLAYTON CO(244)
450	AUGUSTA(250)	ANDERSON(249)
460	CHARLESTON(253)	ORANGEBURG(254), AIKEN(251, 252)
470	LANCASTER(267)	ROCK HILL(266)
	-ROCK HILL(266)	GASTONIA(264-265)
	--GASTONIA(264)	CHARLOTTE-HOSKINS(263)
	---CHARLOTTE-HOSKINS(263)	HICKORY(262)
	COLUMBIA(259)	GREENWOOD(258)
	-GREENWOOD(258)	TAYLORS SUBDIST(257)
	COLUMBIA(261)	SPARTANBURG(260)
510	BOWLING GREEN(327)	FINDLAY(325), 3 RIVERS FILTR PL(326), LIMA(324)

PUB	UTILITY NAME(line number)	UPSTREAM UTILITIES
610	ST. BERNARD(527)	GRETNA(526)
	-GRETNA(526)	NEW ORLEANS(525)
	--NEW ORLEANS(525)	JEFFERSON PARISH #2(524)
	---JEFFERSON PARISH #2(524)	JEFFERSON PARISH #1(523)
	----JEFFERSON PARISH #1(523)	CAPE GIRARDEAU(385), LITTLE ROCK(512,515), FORT SMITH(511), HOT SPRINGS(521), LOGICAL #1(510), BEAVER WATER(514), BOSSIER CITY(520)
	-----CAPE GIRARDEAU(385)	E. ST. LOUIS(382), CARBONDALE(384), KIRKWOOD(383)
	------E. ST. LOUIS(382)	ST. LOUIS(381)
	-------ST LOUIS(381)	ALTON(380), ST. CHARLES(363)
	--------ALTON(380)	QUINCY(374), SPRINGFIELD(379), BLOOMINGTON(377), DECATUR(378), PEORIA(376)
	---------QUINCY(374)	BURLINGTON(371), OTTUMA(373)
	----------BURLINGTON(371)	DAVENPORT(369), IOWA CITY(370)
	-----------DAVENPORT(369)	MOLINE(368)
	------------MOLINE(368)	ST. PAUL(366-7)
	-------------ST. PAUL(366)	MINNEAPOLIS(365)
	--------------MINNEAPOLIS(365)	ST. CLOUD(364)
	----------OTTUMA(373)	DES MOINES(372)
	---------PEORIA(376)	KANKAKEE(375)
	--------ST. CHARLES(363)	ST. LOUIS(362)
	---------ST. LOUIS(362)	CAPITAL CITY(360), FT. LEONARD WOOD(361)
	----------CAPITAL CITY(360)	KANSAS CITY(358-9)
	-----------KANSAS CITY(359)	KANSAS CITY(358), MISSION(357)
	------------KANSAS CITY(358)	LEAVENWORTH(354)
	-------------LEAVENWORTH(354)	ST. JOSEPH(353)
	--------------ST. JOSEPH(353)	COUNCIL BLUFFS(351), FORT COLLINS(311-2), LONGMONT(328), BOULDER(329-30), ENGLEWOOD(339-340), THORNTON(335), WESTMINSTER(332), CASPER(352)
	---------------COUNCIL BLUFFS(351)	OMAHA(350)
	----------------OMAHA(350)	SIOUX CITY(349)
	-----------------SIOUX CITY(349)	ABERDEEN(348), BISMARCK(347)
	------------------BISMARCK(347)	GREAT FALLS(346)
	-------------------GREAT FALLS(346)	HELENA(344-5)
	--------------------HELENA(344-5)	BUTTE(343)

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PUB   UTILITY NAME(line number)                           UPSTREAM UTILITIES

610   ----------------ENGLEWOOD(339)                      AURORA(338)
      -----------------AURORA(338)                        DENVER(337)
      ----------------THORNTON(335)                       WESTMINSTER(334)
      -----------------WESTMINSTER(334)                   CONSOLIDATED MUTUAL(333)
      ----------------WESTMINSTER(334)                    ARVADA(331)
      ----------------CASPER(352)                         CHEYENNE(336)
      -------------MISSION(357)                           LAWRENCE(356)
      --------------LAWRENCE(356)                         TOPEKA(355)
      -------LOGICAL #1(510)                              OKC OVERHOLSER(509), LUBBOCK(506), DEL CITY(505),
                                                          MIDWEST CITY(507), SHAWNEE(508), LOGICAL #2(504)
      --------DEL CITY(505)                               MIDWEST CITY(507)
      --------------BEAVER WATER(514)                     FAYETTVILLE(513)
      --------------BOSSIER CITY(520)                     TEXARKANA(519), LAWTON(516),
                                                          OKC DRAPER(517), SHREVEPORT(518)
      --------LOGICAL #2(504)                             BARTLESVILLE(498), PUEBLO(495), PONCA CITY(497),
                                                          OKC-HEFNER(493), MUSKOGEE(503), TULSA(499)
      ---------PUEBLO(495)                                COLORADO SPRINGS(494)
      ---------MUSKOGEE(503)                              TULSA(501), JOPLIN(502)
      ----------TULSA(501)                                TULSA(500)
      --------PADUCAH(492)                                FLORENCE(490), BOWLING GREEN(469),
                                                          CLARKSVILLE(473-4), LOGICAL #4(468),
                                                          COLUMBIA(491), HUNTSVILLE(488)
      ---------CLARKSVILLE(473)                           NASHVILLE(471)
      ----------NASHVILLE(471)                            MADISON SBRBN(472)
      -----------MADISON SBRBN(472)                       MURFREESBORO(470)
      ---------LOGICAL #4(468)                            EVANSVILLE(456), TERRE HAUTE(459),
                                                          BLOOMINGTON(465-7), INDIANAPOLIS(463-4)
      ----------EVANSVILLE(456)                           LOUISVILLE(454), FT. KNOX(455)
      -----------LOUISVILLE(454)                          IND CITIES-W.C.N.A.(453)
      ------------IND CITIES WATER CORP-NEW ALBANY        WEST SCOTT CO(452), FRANKFORT(451),
                                             (455)        COVINGTON(444), RICHMOND(446)
      -------------FRANKFORT(451)                         LEXINGTON(449-50)
      --------------COVINGTON(444)                        KENTON CO(448), CINCINNATI(447)
      ---------------CINCINNATI(447)                      NEWPORT(445)
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PUB  UTILITY NAME(line number)                             UPSTREAM UTILITIES

610  -----------------NEWPORT(445)                         COLUMBUS(442-3), PORTSMOUTH(439)
     ------------------COLUMBUS(442)                       MARION(440-1)
     ------------------PORTSMOUTH(439)                     ASHLAND(438)
     -------------------ASHLAND(438)                       HUNTINGTON(437)
     --------------------HUNTINGTON(437)                   WHEELING(431), OHIO WATER-MASSION(434)
                                                           CHARLESTON(436), MANSFIELD(433),
                                                           BECKLEY(435), BARBERTON(432)
     ---------------------WHEELING(431)                    STEUBENVILLE(430)
     ----------------------STEUBENVILLE(430)               EAST LIVERPOOL(429)
     -----------------------EAST LIVERPOOL(429)            BEAVER FALLS(428), W. PENN. WATER(414),
                                                           CANONSBURG(415-417), PITTS. WATER(397)
     ------------------------BEAVER FALLS(428)             STRUTHERS(421), W. PA. WATER(423),
                                                           ALLIANCE(418), BUTLER(425,427,387),
                                                           BUTLER(386,424&6), WARREN(419)
     ------------------------W. PA WATER(423)              SHARON(422)
     -------------------------BUTLER(386,424&6)            BUTLER(425,427,387)
     -----------------------W. PENN. WATER(414)            MCKEESPORT(413)
     ------------------------MCKEESPORT(413)               CHARLEROI(405), MCKEESPORT(412)
     -------------------------CHARLEROI(405)               TRI CO. MUN. AUTHORITY(404)
     --------------------------TRI CO. MUN. AUTH.(404)     JEFFERSON(402-403)
     ---------------------------JEFFERSON(403)             S.W. PA WATER AUTHORITY(401),
                                                           S.W. PA WATER AUTHORITY(403)
     ----------------------------SW PA WATER AUTH.(401)    MORGANTOWN(399,400)
     -----------------------------MORGANTOWN(400)          FAIRMONT(398)
     ----------------------------SW PA WATER AUTH.(403)    S.W. PA WATER AUTHORITY(402)
     ------------------------MCKEESPORT(412)               CONNELSVILLE(410)
     -------------------------CONNELSVILLE(412)            DUNBAR TWP(406), WESTMORELAND CO(408-10)
     ----------------------PITTS. WATER(397)               WILKINSBURG(396)
     -----------------------WILKINSBURG(396)               NEW KENSINGTON(395)
     ------------------------NEW KENSINGTON(395)           W. PENN. WATER(386,424,426)
                                                           GREATER JOHNSTOWN(388-392)
     -------------------------W. PENN. WATER(386,424&6)    N. BUTLER W. PA WATER(387,425,427)
     ---------TERRE HAUTE(459)                             KOKOMO(458), INTERSTATE WATER CO(457)
     ---------INDIANAPOLIS(464)                            MUNCIE(460-62)
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PUB	UTILITY NAME(line number)	UPSTREAM UTILITIES
610	--------HUNTSVILLE(488)	TENN-AMERICAN WATER(487)
	---------TENN-AMERICAN WATER(487)	CLEVELAND(486), HALLSDALE POWELL(484), KNOXVILLE(482-5)
	----------KNOXVILLE(482)	MARYVILLE(483), MORRISTOWN(479), HENDERSONVILLE(481), ASHEVILLE(480)
	-----------MORRISTOWN(479)	KINGSPORT(478)
	------------KINGSPORT(478)	JOHNSON CITY(477)
	-------------JOHNSON CITY(477)	JOHNSON CITY(476)
	--------------JOHNSON CITY(476)	BRISTOL(475)

PUB	UTILITY NAME(line number)	UPSTREAM UTILITIES
620	BROWNSVILLE(534)	HARLINGEN(533)
	-HARLINGEN(533)	LAREDO(532)
	--LAREDO(532)	EL PASO(531), ALMOGORDO(529)
	---EL PASO(531)	SANTA FE(530)
640	DALLAS CO(542)	DALLAS CITY(540,541), FORT WORTH(536,538)
	DALLAS CITY(539)	GARLAND(543)
650	BRYAN(549)	BELL CO(548), ABILENE(544), TEMPLE(547)
	-ABILENE(544)	ABILENE(545,546)
660	INGLESIDE(551)	CORPUS CHRISTI(550)
840	GRAND FORKS(559)	FARGO(557,558)
	-FARGO(557)	MOOREHEAD(556)
910	PHOENIX DEER VLY(570)	TEMPE(569)
	-TEMPE(569)	PHOENIX(568)
	YUMA(567)	METROPOLITAN WATER DIST(566)
	-METROPOLITAN WATER DIST(566)	LAS VEGAS(565)
	--LAS VEGAS(565)	COLORADO SPRINGS(563), DENVER(561,562)
		CHEYENNE(560)
980	MONROVIA(579)	DESERT WATER(578), SAN GABRIEL VALLEY(577),
		REDLANDS(576)
990	FREMONT(586)	ALMEDA CO(585)
	VALLEJO(583)	FAIRFIELD(582)

For example, one could determine for planning purposes which downstream utilities would be affected by changes in upstream dischargers--PUB 020 has two utilities which are affected by discharges associated with upstream utilities. The city of Corvallis-Willamette River supply (line no. 13 on Table 10) is affected by its next adjacent dischargers plus all the dischargers associated with the city of Eugene-McKenzie River supply (line no. 12). The wastewater routing in this case is very simple--discharges to the Eugene-McKenzie River supply affect not only Eugene but also Corvallis downstream, since the McKenzie is a tributary of the Willamette upstream of Corvallis.

Other cases are much more complicated. Take for example the city of Baltimore in PUB 310. Baltimore (124) is affected by its next adjacent dischargers plus all the dischargers to the Chester (122) supply. The Chester (122) supply is affected by its next adjacent dischargers plus all the discharges to the Lancaster-Susquehanna River (120) supply. The situation at this point became more complex since the Lancaster-Susquehanna River supply is affected by its next adjacent dischargers plus the dischargers affecting five upstream utilities. Further, one of these five, the city of Harrisburg-Susquehanna River supply, (108) is affected by dischargers to several other upstream utilities. One of these is Wilkesbarre, served by Penn Gas & Water (74-85) which has eleven source waters.

It is obvious that the logic for large basins is complex; however, the identification of this structure allows one to "look" upstream or downstream. An upstream example is the case where a water supply is planned to be located on the Susquehanna between Chester and Lancaster. One needs only to determine which dischargers are between the water supply and the next upstream utility, which is Lancaster, and then add the effects of all the dischargers to the Lancaster plant. Another upstream case is where a smaller utility (one serving population under 25,000) is identified using the same source waters as a larger utility in this report. Once the adjacent dischargers are identified, up to the next major utility all the other upstream dischargers affecting the small supply can be determined.

A downstream case is where a discharge is added to one of the Wilksbarre water supplies. This discharge will not only affect Wilksbarre but also Harrisburg, Lancaster, Chester, and Baltimore. Of course the effect decreases for certain pollutants as one moves downstream. This is the subject of a more detailed analysis taking into account fate models, travel times, etc.

Table 10 also provides a tool for identifying areas for further investigation. This table presents the percent of municipal wastewater discharges to most surface water supplies serving 25,000 persons or more. The percentages are calculated for the yearly average and 7-day 10-year low flows. In addition, the total contribution of municipal wastewater is broken down into the volumes originating from primary, secondary, tertiary and unknown treatment. BOD loadings were not explicitly presented on the table. The loadings can be estimated if desired by assuming typical BOD concentration for each type of treatment. The BOD loading was calculated for those utilities estimated to have the greatest wastewater impact. These results are presented in Section 6. Space was allocated in the data base system to accommodate data on BOD and other pollutants if this becomes available.

Scanning the percent municipal wastewater and total numbers of dischargers columns will identify many potential "hot spots" or areas of concern. It must be remembered while examining Table 10 that the percent wastewater values shown include only municipal facilities for which flow data was provided or could be estimated. The contribution to the total percent wastewater values by each type of municipal treatment can be determined by examining the primary, secondary, tertiary and unknown effluent columns. These columns present the total number of dischargers identified by type (N), the total number with flow data (n), and the total average known discharge rate in cfs.

For cases where the N/n ratio is much greater than unity (few facilities with flow data), the percent wastewater estimates will be low. Another estimate of the percent wastewater may be obtained by increasing the discharge flow for each type by the corresponding N/n ratio.

For example, referring to line 24, Lawrence, MA, the percent wastewater estimates provided by Table 10 are 13 percent and 1.0 percent for low flow and mean flow. However, it is noted that only 13 of the 29 dischargers in the unknown effluent category have flow data available. Assuming that the 13 with flow data are a representative sample from the total population of 29 dischargers, the discharge from the unknown category for Lawrence increases from 64 cfs to 143 cfs. This in turn increases the estimated percent wastewater values to 21 percent and 2.7 percent, respectively. This estimate may be too high in some cases, since there is some reason to believe that flow data were more often available for larger dischargers than smaller dischargers.

DISCHARGES TO DRINKING WATER TABLES

Worksheets for those utilities identified in Tables 8 and 9 as having the highest estimated municipal wastewater impact on drinking water supplies are presented in Appendix C for reference. These worksheets present a more detailed breakdown of municipal discharges to drinking water and also present the industrial impact in terms of number of dischargers by SIC group.

For example, the Philadelphia Schuylkill supply not only contains significant wastewater from municipal discharges but also contains wastewater from a considerable number of industrial dischargers. The bottom half of Table 4 on page 12 shows that there are 240 total cumulative dischargers to the Philadelphia Schuylkill supply. Subtracting the 65 municipal dischargers leaves 175 industrial dischargers. The table also shows that 43 industrial dischargers (62 total next adjacent - 19 municipal next adjacent) enter between the water supply intake and the next upstream utility, which in this case is Norristown, about 15 miles upstream. The table shows that several dischargers are in categories which may discharge priority pollutants. The most significant are summarized in Table 12. (See Table 6 for group definition by SIC code.)

TABLE 12. IMPORTANT INDUSTRIAL DISCHARGES TO THE PHILADELPHIA SCHUYLKILL WATER SUPPLY

Group No.	Group Description	Cumulative Dischargers	Next Adjacent Dischargers*
1	Ore Mining and Dressing	11	3
12	Pulp and Paper	6	4
15	Inorganic Chemicals	3	1
19	Rubber Processing	10	2
20	Petroleum Refining	2	1
24	Iron and Steel	8	2
25	Machinery and Mechanical Products	9	9
26	Non-ferrous Metals	3	0

*Within 15 miles for this case

Flow data for the industrial dischargers was not available at this time. However, some estimate of industrial discharge flow could be obtained by using the average water use in manufacturing data supplied by the U.S. Census or average flow data from the EPA Effluent Guidelines Studies.

SECTION 6

RESULTS - POLLUTANT LOADING IN DRINKING WATER SUPPLIES

The receiving water environment will alter the characteristics of the wastewater discharges because of physical, chemical and biological mechanisms such as: oxidation, hydrolysis, photolysis, volatilization, adsorption, biodegradation, biotransformation, and bioaccumulation. Models which can accurately estimate the fate of pollutants are quite complex and data intensive. Also, the fate of many newly identified priority pollutants cannot be determined due to the lack of basic data on their properties.

Modeling the fate of biologically degradable organic pollutants has a long history and has been practiced with some success. Two simple assumptions commonly used in estimating the fate of pollutants in rivers are to assume a first-order decay rate and a plug flow. These were basic assumptions in the development of the classic Streeter-Phelps equation. The results of an application of this simple model are not considered to be very accurate. However, it can be used as a "weighting factor" to deemphasize discharges as a function of distance upstream.

FATE MODEL DEFINITION

The fate model selected for the analysis is based on simple plug flow which assumes wastes are evenly distributed over the cross section of the river, that no mixing occurs along the axis of the river, and that the mass balance equation across a section of the river approximates a first order decay rate and that there are no other sources or sinks.

The steady state equation for this case can then be written as:

$$C(x) = C(0)e^{-kx/v}$$

where: $C(x)$ is the pollutant load at a point x distance from the source
$C(0)$ is the load at the source
k is an organic degradation rate constant
x is the distance from source to point of interest
v is the average velocity of the river

Values for k range from about .1 to .5 day^{-1} and typical stream velocities are 15 to 80 miles per day.

An arbitrary k/v value of .01 was selected for this analysis. The weighting factor as a function of distance can then be expressed as:

$$C(x) = C(0)e^{-.01x}$$

where x is the distance in miles and C is a mass load moving across a section per unit time.

Data on the river mile distance between dischargers and water supply intakes were generally not available. Therefore, the calculations were simplified by assuming that all next adjacent discharges entered the river at a point approximately halfway between utilities or halfway between a utility intake and the headwaters of the basin.

Approximate distances between utilities were determined using 1:500,000 scale maps and dividers. The average distance between utilities analyzed was about 35 miles. The typical root mean square error which arises by making this assumption can be determined from the relation $\Delta x/\sqrt{12}$, where Δx is the distance between utilities. This relation assumes that it is equally probable that a discharger will be at any point along the river. The typical error caused by assuming all dischargers were located mid-point between utilities was therefore about ±10 miles. Substituting this error into the degradation equation results in an error of about 10 percent for each discharger. Since the values of discharge flow and BOD concentrations are not known with any greater accuracy than 10 percent, the addition of this degradation error in the analysis is not considered significant.

Table 13 presents the results of applying this degradation model to the utilities identified by Tables 8 and 9 in Section 5 as having the greater impacts of municipal wastewater on water supply systems. The cities listed in Table 13 are ranked according to percent wastewater after degradation at average flow conditions. The non-degraded or conservative percent wastewater loadings are also shown in the right hand columns for comparison. The model for these cases results in biodegradations ranging from negligible to over a factor of two. The average degradation factor is about 30 percent.

The estimated degraded and conservative BOD loadings are also presented in Table 13. The BOD loadings were estimated by assuming that the typical concentrations for dischargers in each category were as follows:

TABLE 13. SOURCE WATER IMPACT ACCORDING TO ESTIMATED DEGRADED MUNICIPAL WASTEWATER LOADS

State	City	Line(1)	Source Water	Source(2) Flow (CM/m)	Degraded			Conservative	
					Percent(3) Wastewater	BOD Load(4) (KKg/day)	BOD(5) (mg/l)	Percent Waste-Water	BOD Load (KKg/day)
MI	Ypsilanti	323	Huron R	670	11	2.2	2.3	13	2.4
SC	Columbia	259	Saluda R	4,900	9.8	13	1.9	16	22
SC	Greenwood	258	Lk Greenwood	3,300	5.4	5.2	1.1	7.7	7.3
CO	Pueblo	495	Arkansas R	1,200	5.3	1.8	1.0	7.6	2.6
CO	Thornton	335	Clear Ck	150	4.2	.30	1.4	4.5	.34
NJ	Milburn	54	Passaic R	290	4.2	.58	1.4	4.8	.66
NJ	Little Falls	55	Passaic R	2,000	4.1	3.2	1.1	4.9	3.6
NJ	Elizabeth	166	Del-Raritan CA	160	3.9	.08	.33	4.3	.09
PA	Bryn Mawr	149	Neshaminy Ck	500	3.5	1.3	1.8	3.8	1.4
AL	Birmingham	207	Cabaha R	370	3.4	.35	.66	3.6	.39
TX	Ingleside	551	Nueces R	1,460	3.2	1.6	.78	3.5	1.7
IN	Indianapolis	464	White R	2,400	3.0	4.9	1.4	4.3	6.8
CO	Westminster	334	Clear Ck	160	3.0	.27	1.2	3.2	.29
TX	Dallas	539	Lk Ray Hubbard	2,100	2.7	.65	.21	2.8	.69
PA	Philadelphia	153	Schuylkill R	4,600	2.5	4.6	.69	3.5	5.9
DE	Wilmington	158	Brandywine Ck	780	2.4	.52	.46	2.4	.53
CO	Englewood	339	S. Platte R	398	2.4	.27	.47	2.6	.29
WI	Oshkosh	273	Lk Winnebago	6,830	2.4	8.4	.85	3.3	11
AL	Langdale	235	Chattahoochee R	9,500	2.3	6.5	.48	3.8	10
GA	LaGrange	234	Chattahoochee R	9,500	2.2	6.1	.45	3.6	9.8
OH	Bowling Green	327	Maumee R	7,580	1.6	4.3	.39	2.8	7.8
GA	Columbus	237	Lk Oliver	10,500	1.5	4.5	.30	3.2	10
TX	Fort Worth	538	Ben Brook Lk	104	1.4	.04	.28	1.6	.05
NJ	Elizabeth	167	Raritan CA	1,230	.95	.74	.72	1.1	.86
PA	Pittsburgh	397	Allegany	32,700	.73	13	.28	1.0	18

(1) Line number refers to Table 10, Section 5.
(2) Average source water flow - cubic meters/minute
(3) Cumulative percent wastewater estimates using exponential degradation model
(4) Estimated degraded BOD load - metric tons/day due to upstream municipal dischargers
(5) Estimated BOD concentration due to upstream municipal dischargers

Primary = 75 mg/l based on raw influent of 150
mg/l with 50% removal
Secondary = 30 mg/l (typical permit value observed)
Tertiary = 5 mg/l

The estimated BOD concentrations in the water supply at the points of abstraction due to upstream municipal wastewater dischargers are also presented in Table 13. These were determined by dividing the estimated degraded BOD loads by the source water supply flow. Typical concentrations of BOD in the water supplies caused by upstream dischargers are estimated to range from 0.2 to 2 mg/l for those cases which are impacted the greatest.

The estimated BOD loadings shown in Table 13 are based on typical values and reasonable assumptions and are considered to represent the order of magnitudes of wastewater and pollutants which actually exist for the cases shown.

SECTION 7

PROJECTION OF WASTEWATER IMPACTS ON WATER SUPPLIES

Factors which are considered to modify wastewater impacts on water supplies as a function of time are:

1. Wastewater treatment regulations
2. Industrial change and growth
3. Population growth.

Treatment Regulations

Public law 92-500 is the basis for present and future regulations to decrease municipal wastewater loads to receiving waters. This law requires nationwide improvements in municipal wastewater treatment and allows for more stringent local regulations when considered necessary. The law also requires the development of industrial waste pretreatment regulations which will tend to decrease certain industrial components to municipal waste streams.

Amendments enacted during 1977 to public law 92-500 will affect the allowable concentration of non-conventional pollutants in waste streams and provide for three strategies to be developed to accomplish the control of potentially toxic pollutants. These are: industry by industry, area by area, and pollutant by pollutant. The extent of these changes is unknown since regulations have not yet been developed.

Examination of the status of the various types of municipal treatment as currently listed in the WIRW data base provided the following statistics:

Municipal Treatment by Type	
Unknown	34.2%
Primary	9.4%
Secondary	52.9%
Tertiary	3.5%

The "Unknown" category represents the municipal dischargers listed with no treatment or no treatment data available. This is a reflection of data found in the source files used to build WIRW, with MWFI and NEEDS as the primary source of treatment information.

Primary plants will probably be converted to secondary or tertiary plants at a rate depending on the availability of construction funding. The number of secondary plants being converted to tertiary plants could be significant because of the recent emphasis on priority pollutants.

For the purpose of projection, it was assumed that all primary and unknown plants would be converted to secondary plants by 1984. No conversions from secondary to tertiary plants were assumed, since there is no basis for a projection and regulations affecting these changes are in a state of flux.

Growth

The volume of municipal wastewater discharges will tend to increase because of industrial and population growth. However, the industrial growth rate will probably be slowed by pretreatment regulations and increased emphasis on inplant recycling. Therefore, it was assumed that the major factor in increased municipal discharges would be population growth. Table 14 presents the population growth rates for the most significantly impacted cities shown previously in Tables 8 and 9 . A linear relationship was assumed between wastewater generated and population growth, and between percent degraded wastewater and growth.

Results

Table 15 presents the results of projecting to 1984 the percent wastewater and BOD loading based on the treatment-growth assumptions discussed previously. By comparing the data in Table 12 with the data in Table 15 it may be seen that the cities influenced by high population growth rates and a higher degree of present treatment increased in the percent wastewater and BOD ranking. The source waters of certain cities are seen to decrease in BOD loading due to projected changes in treatment and growth. These include: Milburn and Little Falls, Bryn Mawr, Indianapolis, Philadelphia, Oshkosh, Elizabeth and Pittsburg.

TABLE 14. PROJECTED POPULATION GROWTHS FOR EACH STUDY AREA

State	City	Line	SMSA(1)	Percent Population Change 1970-1975(2)	 1976-1984(3)
MI	Ypsilanti	502	Ann Arbor	9.5	15
SC	Columbia	259	Columbia	14.8	24
SC	Greenwood	258	Greenville-Spartanburg	11.2	18
CO	Pueblo	495	Pueblo	6.1	9.8
CO	Thornton	335	Denver-Boulder	13.3	21
NJ	Milburn	54	Paterson-Passaic	-1.8	-2.9
NJ	Little Falls	55	Paterson-Passaic	-1.8	-2.9
NJ	Elizabeth	166	Newark	-3.0	-4.8
PA	Bryn Mawr	149	Philadelphia	-.6	-.96
AL	Birmingham	207	Birmingham	3.4	5.4
TX	Ingleside	551	Corpus Christi	4.4	7.0
IN	Indianapolis	464	Indianapolis	3.2	5.1
CO	Westminster	334	Denver-Boulder	13.3	21
TX	Dallas	539	Dallas-Fort Worth	7.3	12
PA	Philadelphia	153	Philadelphia-Reading	1.2	1.9
DE	Wilmington	158	Wilmington	3.5	5.6
CO	Englewood	339	Denver-Boulder	13.3	21
WI	Oshkosh	273	Appleton-Oshkosh	3.0	4.8
AL	Langdale	235	Atlanta	13.2	21
GA	La Grange	234	Atlanta	13.2	21
OH	Bowling Green	327	Toledo	2.5	4
GA	Columbus	237	Atlanta	13.2	21
TX	Fort Worth	538	Dallas-Fort Worth	7.3	12
NJ	Elizabeth	167	Newark	-3.0	-4.8
PA	Pittsburgh	397	Pittsburgh	-3.6	-5.8

(1) Standard Metropolitan Statistical Areas (SMSA) where most dischargers located

(2) Percent population changes from Bureau of Census County and City Data Book 1977

(3) Projected population changes from 1976 to 1984 assuming constant growth rate

TABLE 15. PROJECTED SOURCE WATER IMPACTS ACCORDING TO PERCENT DEGRADED WASTEWATER

State	City	Line(1)	Source Water	Source(2) Flow (CM/m)	Projected-1984 Percent Wastewater (3)	Projected-1984 BOD Load (KKg/day) (4)	Present-1976 Percent Wastewater	Present-1976 BOD Load (KKg/day)
MI	Ypsilanti	502	Huron R	670	13	2.5	11	2.2
SC	Columbia	259	Saluda R	4,900	12	16	9.8	13
SC	Greenwood	258	Lk Greenwood	3,300	6.4	6.1	5.4	5.2
CO	Pueblo	495	Arkansas R	1,200	5.8	2.0	5.3	1.8
CO	Thornton	335	Clear Ck	150	5.1	.36	4.2	.30
NJ	Milburn	54	Passaic R	290	4.1	.34	4.2	.58
NJ	Little Falls	55	Passaic R	2,000	4.0	2.3	4.1	3.2
NJ	Elizabeth	166	Del-Raritan CA	160	3.7	.07	3.9	.08
AL	Birmingham	207	Cabaha R	370	3.6	.37	3.4	.35
CO	Westminster	334	Clear Ck	160	3.6	.33	3.0	.27
TX	Ingleside	551	Nueces R	1,460	3.4	1.7	3.2	1.6
PA	Bryn Mawr	149	Neshaminy Ck	500	3.2	.45	3.5	1.3
IN	Indianapolis	464	White R	2,400	3.2	2.2	3.0	4.9
TX	Dallas	539	Lk Ray Hubbard	2,100	3.0	.72	2.7	.65
CO	Englewood	339	S. Platte R	398	2.9	.33	2.4	.27
AL	Langdale	235	Chatahoochee R	9,500	2.8	7.9	2.3	6.5
GA	La Grange	234	Chattahoochee R	9,500	2.7	7.4	2.2	6.1
PA	Philadelphia	153	Schuylkill R	4,600	2.5	3.4	2.5	4.6
DE	Wilmington	158	Brandywine Ck	780	2.5	.55	2.4	.52
WI	Oshkosh	273	Lk Winnebago	683	2.5	.49	2.4	8.4
GA	Columbus	237	Lk Oliver	10,500	1.8	5.4	1.5	4.5
OH	Bowling Green	327	Marmee R	7,580	1.7	4.5	1.6	4.3
TX	Fort Worth	538	Ben Brook Lk	104	1.6	.04	1.4	.04
NJ	Elizabeth	167	Raritan CA	1,230	.90	.32	.95	.74
PA	Pittsburgh	397	Allegany R	32,700	.69	6.5	.73	13

(1) Line number refers to Table 10, Section 5.
(2) Average source water flow - cubic meters/minute.
(3) Projected cumulative percent wastewater using exponential degradation model.
(4) Projected degraded BOD load due to upstream municipal dischargers - metric tons/day.

APPENDIX A

GUIDE TO CITY INDEX

The City Index provides valuable information facilitating the analytical use of Table 10 "Estimated Extent of Municipal and Industrial Discharges at Public Drinking Water Supply Intake Points." Each city identified in the WIRW Database is listed in this index. Each state associated with those cities is also listed. The state is listed first in alphabetical order, with each city listed in alphabetical order within those states. If a city has more than one source water, it is listed for each different source water. Source waters are given as a reference guide. Table 10 Line Numbers are also given for easy cross-reference. Each listing is also accompanied by a PUB Number, as Table 10 is organized according to this code number. This number represents the drainage basin of the source water in question. It is listed from least to largest. The code has no value except as an identification number.

CITY INDEX LISTING

STATE	CITY	LINE NO	PUB	SOURCE WATER
AK	ANCHORAGE	001	010	SHIP CREEK
AL	BIRMINGHAM	206	410	SMITH LAKE
AL	BIRMINGHAM	207	410	CABAHA RIVER
AL	BIRMINGHAM	208	410	INLAND LAKE
AL	DECATUR	489	610	TENNESSEE RIVER
AL	FLORENCE	490	610	CYPERSS CK
AL	GADSDEN	204	410	COOSA RIVER
AL	HUNTSVILLE	488	610	TENNESSEE R
AL	LANGDALE	235	430	CHATTAHOOCHEE R
AL	MOBILE	761	420	BIG CREEK
AL	MONTGOMERY	205	410	TALLAPOOSA R
AL	PHENIX CITY	236	430	CHATTAHOOCHEE R
AL	PRICHARD	762	421	EIGHT MILE CK
AL	TUSCALOOSA	203	410	NORTH RIVER
AR	FAYETTEVILLE	513	610	WHITE RIVER
AR	FORT SMITH	511	610	LAKE FT. SMITH
AR	HOT SPRINGS	521	610	OUACHITA RIVER
AR	LITTLE ROCK	512	610	MAUMELLE LAKE
AR	LITTLE ROCK	515	610	LAKE WINONA
AR	LOWELL	514	610	BEAVER RESERVOIR
AZ	PHOENIX	570	910	SALT RIVER PROJ
AZ	PHOENIX	568	910	SALT AND VERDE
AZ	YUMA	567	910	AMERICAN CANAL
AZ	TEMPE	569	910	LAKE
CA	CORTE MADERA	797	950	NICASIO RE
CA	CORTE MADERA	791	940	KENT RESERVOIR
CA	CORTE MADERA	792	940	ALPINE RESERVOIR
CA	CORTE MADERA	793	940	BON TEMPE RE
CA	ESCONDIDO	804	985	LAKE HENSHAW
CA	FAIRFIELD	582	990	CACHE SLOUGH
CA	FAIRFIELD	588	995	PUTAH SOUTH CA
CA	FONTANA	577	980	LYTLE CREEK
CA	FREMONT	586	990	SOUTH BAY AQUED
CA	HAYWARD	585	990	SOUTH BAY
CA	LOS ANGELES	566	910	COLORADO RIVER
CA	LOS ANGELES	780	902	OWENS VALLEY AQ
CA	MILLBRAE	789	930	CALAVERAS RE
CA	MILLBRAE	786	920	CRYSTAL SPRINGS
CA	MILLBRAE	787	920	SAN ANDREAS RES
CA	MONROVIA	579	980	MONROVIA AND SA
CA	MONTEREY	799	960	CARMEL RIVER
CA	NAPA	801	970	MILLIKEN RE
CA	NAPA	802	970	LAKE HENNESSEY

STATE	CITY	LINE NO	PUB	SOURCE WATER
CA	OAKLAND	584	990	PARDEE RESERVOIR
CA	OAKLAND	783	906	CHABOT RESERVOIR
CA	OAKLAND	784	906	UPPER SAN LEAND
CA	OAKLAND	781	904	SAN PABLO RE
CA	PALM SPRINGS	571	912	SNOW & FALL CR
CA	PALM SPRINGS	578	980	CHINO CREEK
CA	PETALUMA	796	949	LAWLER RESERVOIR
CA	REDLANDS	576	980	MILL CREEK
CA	SACRAMENTO	580	990	AMERICAN RIVER
CA	SACRAMENTO	581	990	SACRAMENTO R
CA	SAN DIEGO	782	905	OTAY RESERVOIR
CA	SAN JOSE	785	915	BEAR GULCH RE
CA	SAN LUIS OBISPO	788	925	SANTA MARGARITA
CA	SAN LUIS OBISPO	790	935	WHALE ROCK RE
CA	SANTA BARBARA	794	945	GIBRALTOR RE
CA	SANTA BARBARA	795	945	CACHUMA RE
CA	SANTA CRUZ	575	955	SAN LORENZO R
CA	SANTA CRUZ	574	955	NEWELL CREEK
CA	VALLEJO	800	965	LAKE CURRY
CA	VALLEJO	587	995	PUTAH SOUTH CAN
CA	VALLEJO	583	990	CACHE SLOUGH
CA	VENTURA	803	975	VENTURA RIVER
CA	WATSONVILLE	798	956	2 STREAMS IN BR
CO	ARAVADA	331	610	RALSTON RE
CO	AURORA	338	610	SOUTH PLATTE R
CO	BOULDER	330	610	MIDDLE BOULDER
CO	BOULDER	329	610	SILVER LAKE
CO	COLO SPRINGS	494	610	PIKES PEAK WATE
CO	COLO SPRINGS	563	910	DILLON RE
CO	DENVER	561	910	WILLIAMS FORK R
CO	DENVER	562	910	DILLON RE
CO	DENVER	337	610	SOUTH PLATTE R
CO	ENGLEWOOD	340	610	BEAR CREEK
CO	ENGLEWOOD	339	610	SOUTH PLATTE R
CO	FORT COLLINS	341	610	HORSETOOTH RE
CO	FORT COLLINS	342	610	CACHE LA POUDRE
CO	GREELEY	771	810	BELLVIEW PLANT
CO	GREELEY	770	810	BOYD LAKE
CO	LAKEWOOD	333	610	LENA GULCH MAPL
CO	LONGMONT	328	610	ST VRAIN RIVER
CO	PUEBLO	495	610	ARKANSAS RIVER
CO	THORNTON	335	610	CLEAR CREEK
CO	WESTMINSTER	332	610	STANLEY LAKE
CO	WESTMINSTER	334	610	CLEAR CREEK

STATE	CITY	LINE NO	PUB	SOURCE WATER
CT	ANSONIA	638	102	MIDDLE RESERVOIR
CT	ANSONIA	637	101	FOUNTAIN LAKE
CT	ANSONIA	640	104	QUILLINAN RE
CT	ANSONIA	639	103	BUNGAY RESERVOIR
CT	BRIDGEPORT	643	107	HEMLOCKS RE
CT	BRIDGEPORT	642	106	EASTON RESERVOIR
CT	BRIDGEPORT	645	109	SHELTON RES #2
CT	BRIDGEPORT	644	108	TRAP FALLS RE
CT	BRISTOL	646	111	BRISTOL RESERVOIR
CT	DANBURY	647	112	MARGERIE RE
CT	DANBURY	649	114	EAST LAKE RE
CT	DANBURY	648	113	WEST LAKE
CT	GREENWICH	651	116	MIANUS MILL PON
CT	GREENWICH	650	115	PUTNAM RESERVOIR
CT	GROTON	653	118	POQUONNOCK RE
CT	GROTON	652	117	GROTON RESERVOIR
CT	HARTFORD	656	121	NEPAUG RESERVOIR
CT	HARTFORD	654	119	BARKHAMSTED RE
CT	HARTFORD	657	122	W HARTFORD RE
CT	MANCHESTER	658	123	PORTER RESERVOIR
CT	MANCHESTER	660	125	BUCKINGHAM RE
CT	MANCHESTER	659	124	HOWARD RESERVOIR
CT	MANCHESTER	661	126	GLOBE HOLLOW RE
CT	MERIDEN	662	127	BROAD BROOK RE
CT	MERIDEN	664	129	MERIMERE RE
CT	MERIDEN	663	128	ELMERE RESERVOIR
CT	MERIDEN	666	131	BRADLEY HUBBARD
CT	NEW BRITAIN	667	132	SHUTTLE MEADOW
CT	NEW BRITAIN	669	134	WHIGVILLE RE
CT	NEW BRITAIN	668	133	WASEL RESERVOIR
CT	NEW HAVEN	673	138	MALTBY LAKES
CT	NEW HAVEN	672	137	LAKE WHITNEY
CT	NEW HAVEN	671	136	FARM RIVER DIVE
CT	NEW HAVEN	670	135	LAKE SALTONSTAL
CT	NEW LONDON	675	141	BECKWITH POND
CT	NEW LONDON	674	139	LAKE KONOMOC
CT	NORWALK	676	142	ROCK LAKE
CT	NORWALK	677	143	GRUPE RESERVOIR
CT	NORWICH	688	155	DEEP RIVER RE
CT	NORWICH	679	145	STONY BROOK RE
CT	NORWICH	678	144	FAIRVIEW RE
CT	SOUTHINGTON	680	146	RESERVOIR #1
CT	STAMFORD	681	147	NORTH STAMFORD
CT	STAMFORD	682	148	LAUREL RESERVOIR

STATE	CITY	LINE NO	PUB	SOURCE WATER
CT	WALLINGFORD	683	149	MACKENSIE RE
CT	WALLINGFORD	684	151	PISTAPAUG POND
CT	WATERBURY	685	152	WIGWAM RESERVOIR
CT	WATERBURY	687	154	E MOUNTAIN RE
CT	WATERBURY	686	153	MORRIS RESERVOIR
CT	WATERBURY	689	156	PROSPECT RES -
DE	CLAYMONT	159	320	RED CLAY CREEK
DE	CLAYMONT	160	320	CHRISTIANA CRK
DE	CLAYMONT	161	320	WHITE CLAY CRK
DE	WILMINGTON	157	320	HOOPES RE
DE	WILMINGTON	158	320	BRANDYWINE CRK
FL	BRADENTON	767	495	WARD LAKE
FL	MELBOURNE	764	475	LAKE WASH ON TH
FL	W PALM BEACH	269	485	LAKE OKEECHOBEE
FL	W PALM BEACH	268	485	LAKE MANGONIA
FL	W PALM BEACH	270	485	CLEAR LAKE
GA	ATHENS	243	440	NORTH OCONEE RI
GA	ATHENS	242	440	SANDY CREEK
GA	ATLANTA	231	430	CHATTAHOOCHEE R
GA	AUGUSTA	250	450	SAVANNAH RIVER
GA	COLUMBUS	237	430	LAKE OLIVER ON
GA	DALTON	200	410	MILL CREEK
GA	DALTON	201	410	CONASAUGA RIVER
GA	DECATUR	230	430	CHATTAHOOCHEE R
GA	DOUGLASVILLE	233	430	ANNEEWAKEE CRK
GA	EAST POINT	232	430	SWEET WATER C
GA	GAINESVILLE	228	430	LAKE SIDNEY LAN
GA	GRIFFIN	238	430	HEADS CREEK RE
GA	GRIFFIN	239	430	FLINT RIVER
GA	LAGRANGE	234	430	CHATTAHOOCHEE R
GA	LAWRENCEVILLE	229	430	CHATTAHOOCHEE R
GA	MACON	245	440	OCMULGEE RIVER
GA	MORROW	244	440	LITTLE COTTON I
GA	ROME	262	410	OOSTANAULA R
HI	HILO	628	025	KAHOAMA STREAM
HI	HILO	626	025	LAUOLI FALLS IN
HI	HILO	627	025	PUKA MAUI INTAK
IA	BURLINGTON	371	610	MISSISSIPPI R
IA	COUNCIL BLUFFS	351	610	MISSOURI RIVER
IA	DAVENPORT	369	610	MISSISSIPPI R
IA	DES MOINES	372	610	RACOON RIVER
IA	IOWA CITY	370	610	IOWA RIVER
IA	OTTUMA	373	610	DES MOINES R
IA	SIOUX CITY	349	610	MISSOURI RIVER

STATE	CITY	LINE NO	PUB	SOURCE WATER
ID	POCATELLO	009	020	MINK CREEK (WES
ID	POCATELLO	010	020	WHISKEY JACK CR
IL	ALTON	380	610	MISS RIVER
IL	BLOOMINGTON	377	610	MONEY CREEK
IL	CARBONDALE	384	610	CEDAR CK RE
IL	CHICAGO	288	500	LAKE MICHIGAN
IL	DANVILLE	457	610	NORTH FORK VERM
IL	DECATUR	378	610	LAKE DECATUR
IL	E ST LOUIS	382	610	MISSISSIPPI R
IL	EVANSTON	287	500	LAKE MICHIGAN
IL	HIGHLAND PARK	284	500	LAKE MICHIGAN
IL	KANKAKEE	375	610	KANKAKEE RIVER
IL	MOLINE	368	610	MISSISSIPPI R
IL	NORTHBROOK	285	500	LAKE MICHIGAN
IL	PEORIA	376	610	ILL RIVER
IL	QUINCY	374	610	MISSISSIPPI R
IL	SPRINGFIELD	379	610	LAKE SPRINGFIELD
IL	WAUKEGAN	283	500	LAKE MICHIGAN
IL	WILMETTE	286	500	LAKE MICHIGAN
IN	BLOOMINGTON	467	610	MONROE RESERVOIR
IN	BLOOMINGTON	466	610	GRIFFEY CREEK
IN	BLOOMINGTON	465	610	BEANBLOSSOM CR
IN	E CHICAGO	291	500	LAKE MICHIGAN
IN	EVANSVILLE	456	610	OHIO RIVER SHAW
IN	FORT WAYNE	326	510	ST JOE RIVER
IN	GARY	292	500	LAKE MICHIGAN
IN	GARY	293	500	LAKE MICHIGAN
IN	HAMMOND	289	500	LAKE MICHIGAN
IN	HAMMOND	290	500	LAKE MICHIGAN
IN	INDIANAPOLIS	463	610	FALL CREEK
IN	INDIANAPOLIS	464	610	WHITE RIVER VIA
IN	JEFFERSONVILLE	453	610	OHIO RIVER
IN	KOKOMO	458	610	WILDCAT CREEK
IN	MICH CITY	294	500	LAKE MICHIGAN
IN	MUNCIE	460	610	WHITE RIVER
IN	MUNCIE	462	610	BUCK CREEK
IN	MUNCIE	461	610	PRAIRIE CRK RE
IN	RICHMOND	446	610	WHITEWATER R
IN	TERRE HAUTE	459	610	WABASH RIVER
KS	KANSAS CITY	358	610	MISSOURI RIVER
KS	LAWRENCE	356	610	KANSAS RIVER
KS	LEAVENWORTH	354	610	MISSOURI RIVER
KS	MISSION	357	610	KANSAS RIVER
KS	TOPEKA	355	610	KANSAS RIVER

STATE	CITY	LINE NO	PUB	SOURCE WATER
KS	WICHITA	496	610	CHENEY RE
KY	ASHLAND	438	610	OHIO RIVER
KY	BOWLING GREEN	469	610	BARREN RIVER
KY	FORT THOMAS	444	610	OHIO RIVER
KY	FORT THOMAS	445	610	OHIO RIVER
KY	FRANKFORT	451	610	KENTUCKY RIVER
KY	FT KNOX	455	610	OTTER CREEK
KY	FT MITCHELL	448	610	LICKING RIVER
KY	GEORGETOWN	452	610	EAGLE CREEK
KY	LEXINGTON	450	610	KY RIVER
KY	LEXINGTON	449	610	HICKMAN CREEK R
KY	LOGICAL CITY #4	468	610	OHIO RIVER
KY	LOUISVILLE	454	610	OHIO RIVER
KY	PADUCAH	492	610	OHIO RIVER
LA	NEW ORLEANS	525	610	MISSISSIPPI R
LA	BOSSIER CITY	520	610	RED RIVER
LA	CHALMETTE	527	610	MISSISSIPPI R
LA	GRETNA	526	610	MISSISSIPPI R
LA	LOCKPORT	535	630	BAYOU LAFOURCHE
LA	MARRERO	524	610	MISSISSIPPI R
LA	METAIRIE	523	610	MISSISSIPPI R
LA	MONROE	522	610	BAYOU DESIARD
LA	SHREVEPORT	518	610	CROSS LAKE
MA	AMHERST	692	160	AMETHYST BROOK
MA	AMHERST	701	205	ATKINS POND
MA	BEVERLY	033	215	IPSWICH RIVER
MA	BEVERLY	734	255	WENHAM LAKE
MA	BEVERLY	727	245	PUTNAMVILLE RE
MA	BRAINTREE	749	275	BLUE HILL RIVER
MA	BRAINTREE	742	265	GREAT POND
MA	BROCKTON	760	295	MONPONSETT POND
MA	BROCKTON	755	285	FURNACE & ONHAM L
MA	BROCKTON	700	204	SILVER LAKE
MA	BROCKTON	699	202	AVON RE
MA	CHICOPEE	693	160	QUABBIN RE
MA	DANVERS	702	206	MIDDLETON POND
MA	FALL RIVER	703	208	NORTH WATUPPA P
MA	FITCHBURG	029	181	WACHUSETT LAKE
MA	FITCHBURG	030	180	MEETINGHOUSE P
MA	FITCHBURG	031	212	SCOTT RESERVOIR
MA	GLOUCESTER	709	222	WALLACE RE
MA	GLOUCESTER	707	218	HASKELL RE
MA	GLOUCESTER	706	216	BABSON RESERVOIR
MA	HINGHAM	711	224	ACCORD POND

STATE	CITY	LINE NO	PUB	SOURCE WATER
MA	HINGHAM	710	224	ACCORD BROOK
MA	HOLYOKE	721	236	WRIGHT & ASHLEY
MA	LAWRENCE	024	180	MERRIMACK RIVER
MA	LEOMINSTER	705	214	WACHUSETT RE
MA	LEOMINSTER	725	242	FALL BROOK RE
MA	LOWELL	023	180	MERRIMAC RIVER
MA	LYNN	728	246	HAWKES POND
MA	LYNN	726	244	WALDEN POND
MA	LYNN	730	252	BREEDS POND
MA	LYNN	729	248	BIRCH POND
MA	NEW BEDFORD	731	254	GREAT QUITTICAS
MA	NEW BEDFORD	732	254	LITTLE QUITTICA
MA	NEW BEDFORD	733	254	ASSAWOMPSET PON
MA	PEABODY	735	256	SPRING POND
MA	PEABODY	736	258	SUNTAUG LAKE
MA	PEABODY	032	215	IPSWICH RIVER-E
MA	PITTSFIELD	757	290	ASHLEY BROOK RE
MA	PITTSFIELD	758	290	ROARING BROOK
MA	PITTSFIELD	759	290	SACKETT BROOK R
MA	PLYMOUTH	738	262	LITTLE SOUTH PO
MA	PLYMOUTH	743	266	BOOT POND
MA	PLYMOUTH	739	264	GREAT SOUTH PON
MA	RANDOLPH	740	265	GREAT POND
MA	SPRINGFIELD	744	268	LITTLEVILLE RE
MA	SPRINGFIELD	748	274	LUDLOW RESERVOIR
MA	SPRINGFIELD	747	272	COBBLE MT RE
MA	WAKEFIELD	750	276	CRYSTAL LAKE
MA	WEST SPRINGFIELD	691	160	BEAR HOLE BROOK
MA	WESTFIELD	751	278	TEKOA RESERVOIR
MA	WESTFIELD	690	160	GRANVILLE RE
MA	WEYMOUTH	756	286	SWAMP RIVER DIV
MA	WEYMOUTH	741	265	GREAT POND
MA	WORCESTER	754	282	PINE HILL RE
MA	WORCESTER	025	180	KETTLE & LYNDE
MA	WORCESTER	026	180	KENDAIR
MA	WORCESTER	027	180	HOLDEN R
MA	WORCESTER	028	180	PINEHILL RE
MD	ANNAPOLIS	059	305	BROAD CREEK
MD	BALTIMORE	124	310	SUSQUEHANNA R
MD	BALTIMORE	172	340	GUNPOWDER FLS P
MD	BALTIMORE	171	330	N BRCH PATAPSCO
MD	CUMBERLAND	173	350	LAKE GORDON FLT
MD	FREDERICK	175	350	MONOCACY RIVER
MD	FREDERICK	176	350	LINGANORE CREEK

STATE	CITY	LINE NO	PUB	SOURCE WATER
MD	HAGERSTOWN	174	350	POTOMAC RIVER
MD	HYATTSVILLE	169	325	PATUXENT RIVER
MD	HYATTSVILLE	178	350	POTOMAC RIVER
MD	ODENTON	170	325	LITTLE PATUXENT
ME	BANGOR	636	100	FLOODS POND
ME	BIDDEFORD	019	110	SACO RIVER
ME	LEWISTON	665	130	LAKE AUBURN
ME	PORTLAND	020	140	SEBAGO LAKE
ME	WATERVILLE	655	120	CHINA LAKE
MI	BAY CITY	298	500	SAGINAW BAY LON
MI	DETROIT	303	500	DETROIT RIVER
MI	GRAND RAPIDS	295	500	LK MICH FILTRAT
MI	HIGHLAND PARK	301	500	LAKE ST CLAIR
MI	MIDLAND	297	500	LAKE HURON
MI	MONROE	305	500	LAKE ERIE
MI	MUSKEGON	296	500	LAKE MICHIGAN I
MI	PORT HURON	300	500	ST CLAIR RIVER
MI	SAGINAW	299	500	LAKE HURON
MI	WYANDOTTE	304	500	DETROIT RIVER
MI	WYOMING	302	500	LAKE MICHIGAN
MI	YPSILANTI	323	502	HURON RIVER
MN	DULUTH	275	500	LAKE SUPERIOR
MN	MINNEAPOLIS HENNEPIN	365	610	MISSISSIPPI R
MN	MOORHEAD	556	840	RED RIVER
MN	ST CLOUD	364	610	MISSISSIPPI R
MN	ST PAUL	366	610	MISSISSIPPI R
MN	ST PAUL	367	610	RICE CREEK CHAI
MO	CAPE GIRARDEAU	385	610	MISSISSIPPI R
MO	FT LEONARD WOOD	361	610	BIG PINEY RIVER
MO	JEFFERSON CITY	360	610	MISSOURI RIVER
MO	JOPLIN	502	610	SHOAL CREEK
MO	KANSAS CITY	359	610	MISSOURI RIVER
MO	KIRKWOOD	383	610	MERAMEC RIVER
MO	ST CHARLES	363	610	MISSOURI RIVER
MO	ST LOUIS	362	610	MISSOURI RIVER
MO	ST LOUIS	381	610	MISSISSIPPI R
MO	ST JOSEPH	353	610	MISSOURI RIVER
MS	COLUMBUS	199	410	LUXAPALILA R
MS	JACKSON	271	490	PEARL RIVER
MS	MERIDIAN	766	480	LONG CREEK
MS	MERIDIAN	765	480	BONITA
MT	BUTTE	343	610	BIG HOLE RIVER
MT	BUTTE	003	020	MOULTON RE
MT	BUTTE	002	020	BASIN CREEK RE

STATE	CITY	LINE NO	PUB	SOURCE WATER
MT	GREAT FALLS	346	610	MISSOURI RIVER
MT	HELENA	345	610	MISSOURI RIVER
MT	HELENA	344	610	TEN MILE
MT	MISSOULA	004	020	RATTLESNAKE
NC	ASHEVILLE	480	610	N FK SWANNANOA
NC	BURLINGTON	214	415	STONEY CREEK
NC	BURLINGTON	213	415	TOMS CREEK
NC	CHAPEL HILL	216	415	PHILS CRK
NC	CHAPEL HILL	215	415	PRICE CRK
NC	CHAPEL HILL	217	415	MORGAN CRK
NC	CHARLOTTE	263	470	MT ISLAND LAKE
NC	CONCORD	198	405	COLDWATER CRK
NC	DURHAM	220	425	FLAT RIVER
NC	FAYETTEVILLE	218	415	CAPE FEAR RI
NC	GASTONIA	264	470	LONG CREEK
NC	GASTONIA	265	470	CATAWBA RIVER
NC	GOLDSBORO	227	425	LITTLE RI
NC	GREENSBORO	212	415	LAKE BRANDT
NC	GREENSBORO	210	415	LAKE TOWNSEND
NC	GREENSBORO	211	415	HORSE PEN CR
NC	GREENVILLE	241	435	TAR RIVER
NC	HENDERSONVILLE	481	610	MILLS RI
NC	HICKORY	262	470	CATAWBA RIVER
NC	HIGH POINT	209	415	DEEP RI
NC	LEXINGTON	195	405	YADKIN RI
NC	LEXINGTON	196	405	ABBOTTS CR
NC	RALEIGH	221	425	SWIFT CREEK
NC	RALEIGH	222	425	NEUSE RIVER
NC	RALEIGH	223	425	WALNUT CREEK
NC	ROCKY MOUNT	240	435	TAR RIVER
NC	SALISBURY	197	405	YADKIN RI
NC	STATESVILLE	192	405	FOURTH CREEK
NC	STATESVILLE	191	405	S YADKIN RIVER
NC	WILMINGTON	219	415	CAPE FEAR RIVER
NC	WILMINGTON	763	455	TOOMERS CREEK
NC	WILSON	226	425	CONTENTNEA CRK
NC	WILSON	224	425	SILVER LAKE
NC	WILSON	225	425	TOISNOT SWAMP
NC	WINSTON SALEM	194	405	SALEM CR
NC	WINSTON SALEM	193	405	YADKIN RI
ND	BISMARCK	347	610	MISSOURI RIVER
ND	FARGO	558	840	INTAKE #2 (SHEY
ND	FARGO	557	840	INTAKE #1 (RED
ND	GRAND FORKS	559	840	RED RIVER #1

STATE	CITY	LINE NO	PUB	SOURCE WATER
NE	OMAHA	350	610	MISSOURI RIVER
NH	CONCORD	022	180	PENACOOK LAKE
NH	MANCHESTER	697	170	MASSABESIC LAKE
NH	NASHUA	021	180	PENNICHUCK BROOK
NH	PORTSMOUTH	698	190	BELLAMAY RIVER
NH	SALEM	641	105	CANOBIE LAKE
NJ	ATLANTIC CITY	704	210	DOUGHTY POND
NJ	ELIZABETH	166	320	DELAWARE-RARITA
NJ	ELIZABETH	168	320	RARITAN RIVER
NJ	ELIZABETH	167	320	RARITAN & MILLS
NJ	JERSEY CITY	752	280	BOONTON RE
NJ	JERSEY CITY	753	281	SPLIT ROCK RE
NJ	LITTLE FALLS	055	240	PASSAIC RIVER
NJ	MILLBURN	054	240	PASSAIC RIVER
NJ	MORRISTOWN	737	260	CLYDE POTTS RE
NJ	NEW MILFORD	745	270	LAKE DEFOREST L
NJ	NEWARK	056	240	PEQUANNECK R
NJ	ORANGE	708	220	W BRANCH RAHWAY
NJ	PRINCETON	162	320	DELAWARE RARATI
NJ	SHREWSBURY	057	250	JUMPING BROOK
NJ	SHREWSBURY	058	250	SWIMMING RIVER
NJ	SOMERVILLE	165	320	RARITAN RIVER
NJ	TRENTON	137	320	DELAWARE RIVER
NJ	WOODBRIDGE	163	320	ROBINSON BR OF
NJ	WOODBRIDGE	164	320	DELAWARE RARITA
NM	ALAMOGORDO	529	620	BONITO LAKE
NM	SANTA FE	530	620	SANTA FE RIVER
NV	LAS VEGAS	565	910	LAKE MEAD
NV	NORTH LAS VEGAS	564	910	LAKE MEAD
NV	RENO	573	914	STEAMBOAT DTCH
NV	RENO	572	914	TRUCKEE RIVER
NY	ALBANY	045	230	HANNACROIX CREEK
NY	ALBANY	046	230	BASIC CR RE
NY	AMSTERDAM	040	230	5 IMPOUNDING RE
NY	AUBURN	034	226	OWASCO LAKE
NY	BINGHAMPTON	060	310	SUSQUEHANNA R
NY	BUFFALO	319	500	LAKE ERIE
NY	BUFFALO	318	500	LAKE ERIE
NY	BUFFALO	317	500	LAKE ERIE
NY	DUNKIRK	316	500	LAKE ERIE
NY	ELMIRA	061	310	CHEMUNG RIVER H
NY	ITHACA	036	227	SIX MILE CREEK
NY	ITHACA	035	227	FALL CREEK
NY	KINGSTON	044	230	MINK HOLLOW BR

STATE	CITY	LINE NO	PUB	SOURCE WATER
NY	LOCKPORT	715	225	NIAGARA RIVER
NY	MAMRONECK	723	238	MAMARONECK R
NY	NEW YORK	051	230	CROTON R SYSTEM
NY	NEW YORK	052	230	CATSKILL SYSTEM
NY	NEW YORK	125	320	DELAWARE R SYS
NY	NEWBURGH	048	230	SILVER & PATTON
NY	NEWTONVILE	041	230	STONEY CREEK
NY	NEWTONVILE	042	230	MOHAWK RIVER
NY	NIAGARA FALLS	714	225	WEST BRANCH NIA
NY	NORTH TONAWANDA	713	225	NIAGARA RIVER
NY	OSSINING	049	230	INDIAN BROOK
NY	OSWEGO	322	500	LAKE ONTARIO
NY	PLATTSBURG	717	232	MEADE & WEST BR
NY	POUGHKEEPSIE	047	230	HUDSON RIVER
NY	ROCHESTER	320	500	LAKE ONTARIO
NY	ROCHESTER	321	500	LAKE ONTARIO
NY	ROCHESTER	720	234	HEMLOCK & CANAD
NY	ROME	053	235	FISH CREEK
NY	SPRING VALLEY	746	270	2 DEFOREST LAKE
NY	SYRACUSE	716	228	OTISCO LAKE
NY	SYRACUSE	722	237	SKANEATELES LAKE
NY	TONAWANDA	712	225	W B NIAGARA R
NY	TROY	043	230	TOMHANNOCK RE
NY	UTICA	039	230	HINCKLEY RE
NY	UTICA	038	230	GRAY RE
NY	WATERTOWN	037	229	BLACK RIVER
NY	WHITE PLAINS	724	239	2 RESERVOIR
NY	YONKERS	050	230	SAWMILL RE
OH	AKRON	768	501	CUYAHOGA R
OH	ALLIANCE	418	610	DEER CREEK RE
OH	ASHTABULA	315	500	LAKE ERIE
OH	AVON LAKE	310	500	LAKE ERIE
OH	BARBERTON	432	610	BARBERTON RE
OH	BOWLING GREEN	327	510	MAUMEE RIVER
OH	CINCINNATI	447	610	OHIO RIVER
OH	CLEVELAND	272	500	L ERIE CRIB 4
OH	CLEVELAND	311	500	L ERIE CRIB 3
OH	COLUMBUS	443	610	BIG WALNUT CREEK
OH	COLUMBUS	442	610	SCIOTO RIVER
OH	EAST LIVERPOOL	429	610	OHIO RIVER INTA
OH	ELYRIA	309	500	LAKE ERIE INTAK
OH	FINDLAY	325	510	BLANCHARD RIVER
OH	GENEVA	314	500	LAKE ERIE INTAK
OH	LIMA	324	510	OTTAWA R

STATE	CITY	LINE NO	PUB	SOURCE WATER
OH	LORAIN	308	500	LAKE ERIE
OH	MANSFIELD	433	610	CLEAR FK CK RES
OH	MARION	440	610	LITTLE SCIOTO
OH	MARION	441	610	BIG SCIOTO
OH	MASSILLON	434	610	NEWMAN CREEK
OH	MENTOR	312	500	LAKE ERIE INTAK
OH	PAINESVILLE	313	500	LAKE ERIE
OH	PORTSMOUTH	439	610	OHIO RIVER
OH	SANDUSKY	307	500	LAKE ERIE
OH	STEUBENVILLE	430	610	OHIO RIVER
OH	STRUTHERS	420	610	BURGESS LAKE IN
OH	STRUTHERS	421	610	EVANS LAKE
OH	TOLEDO	306	500	LAKE ERIE
OH	WARREN	419	610	MOSQUITO CREEK
OK	BARTLESVILLE	498	610	HULAH LAKE
OK	DEL CITY	505	610	LAKE THUNDERBIRD
OK	LAWTON	516	610	LAKE LAWTONKA
OK	LOGICAL CITY #1	510	610	ARKANSAS RIVER
OK	LOGICAL CITY #2	504	610	ARKANSAS RIVER
OK	MIDWEST CITY	507	610	LAKE THUNDERBIRD
OK	MUSKOGEE	503	610	FT GIBSON LAKE
OK	OKLAHOMA CITY	509	610	LAKE OVERHOLSER
OK	OKLAHOMA CITY	493	610	HEFNER LAKE
OK	OKLAHOMA CITY	517	610	STANLEY DRAPER
OK	PONCA CITY	497	610	LAKE PONCA
OK	SHAWNEE	508	610	SHAWNEE LK
OK	TULSA	501	610	LAKE EUCHA
OK	TULSA	500	610	LAKE SPAVINAW
OK	TULSA	499	610	OOLAGAH LAKE
OR	COOS BAY	629	040	PONY CREEK
OR	CORVALLIS	013	020	WILLAMETTE RIVER
OR	CORVALLIS	014	020	ROCK CREEK-N F
OR	CORVALLIS	015	020	ROCK CREEK-S F
OR	CORVALLIS	016	020	GRIFFITH CREEK
OR	EUGENE	12	020	MCKENZIE RIVER
OR	MEDFORD	18	030	ROGUE RIVER
OR	PORTLAND	11	020	BULL RUN RIVER
OR	SALEM	17	020	NORTH SANTIAM R
PA	ALLENTOWN	131	320	LITTLE LEHIGH R
PA	ALTOONA	099	310	GLEN WHITE RUN
PA	ALTOONA	096	310	HOMERS GAP RUN
PA	ALTOONA	097	310	MILL RUN
PA	ALTOONA	096	310	KITTANING RUN
PA	BEAVER FALLS	428	610	BEAVER RIVER NE

STATE	CITY	LINE NO	PUB	SOURCE WATER
PA	BENSALEM TWP	141	320	DELAWARE RIVER
PA	BETHLEHEM	136	320	TUNK CR INTAKE
PA	BETHLEHEM	135	320	WILD CK PA FORS
PA	BETHLEHEM	134	320	WILD CREEK
PA	BRISTOL	139	320	DELAWARE RIVER
PA	BRYN MAWR	151	320	CRUM CREEK GEIS
PA	BRYN MAWR	149	320	NESHAMINY CREEK
PA	BRYN MAWR	150	320	PICKERING CREEK
PA	BUTLER	387	610	ALLEGHENY RIVER
PA	BUTLER	426	610	THORN RUN
PA	BUTLER	386	610	ALLEGHENY RIVER
PA	BUTLER	425	610	THORN RUN RE
PA	BUTLER	424	610	ONEIDA-BOYDSTOW
PA	BUTLER	427	610	CONNOQUENESSING
PA	CANONSBURG	416	610	SPEERS RUN IMPO
PA	CANONSBURG	415	610	JOHNSTONS RUN I
PA	CANONSBURG	417	610	LITTLE CHARTIER
PA	CHARLEROI	405	610	MONONGAHELA R
PA	CHESTER	122	310	SUSQUEHANNA R
PA	CHESTER	123	310	OCTARARO CREEK
PA	CONNELSVILLE	411	610	YOUGHIOGHENY
PA	EASTON	126	320	DELAWARE RIVER
PA	FREDERICKTOWN	404	610	MONONGAHELA R
PA	GERMAN TWP	401	610	MONONGAHELA R
PA	GREENSBURG	409	610	IMMEL RES STREA
PA	GREENSBURG	410	610	INDIAN CREEK
PA	GREENSBURG	408	610	BEAVER RUN RE
PA	HANOVER	118	310	LONG ARM CREEK
PA	HANOVER	115	310	LITTLE CONEWAGO
PA	HANOVER BORO	116	310	S BR CONWAGO CR
PA	HARRISBURG	105	310	DEHART RESERVOIR
PA	HARRISBURG	108	310	SUSQUEHANNA R
PA	HARRISBURG	114	310	SWATARA CREEK
PA	HARRISBURG	106	310	STONEY CREEK
PA	HARRISBURG	107	310	BEAVER CREEK
PA	HAZLETON	130	320	MT PLEASANT
PA	HAZLETON	127	320	HARLEIGH
PA	HAZLETON	128	320	DRECK CREEK
PA	HAZLETON	129	320	BARNES RUN
PA	HUNTINGTON	100	310	STONE CREEK
PA	JEFFERSON	402	610	S FORK TEN MILE
PA	JEFFERSON	403	610	MONANGAHELA R
PA	JOHNSTOWN	393	610	BEAR ROCK DAM
PA	JOHNSTOWN	391	610	MILLCREEK RE

STATE	CITY	LINE NO	PUB	SOURCE WATER
PA	JOHNSTOWN	392	610	DALTON RUN RE
PA	JOHNSTOWN	394	610	NORTH FORK RE
PA	JOHNSTOWN	389	610	SALTLICK RE
PA	JOHNSTOWN	390	610	TOYLLDAL DAM
PA	JOHNSTOWN	388	610	SANDY RUN DAM
PA	LANCASTER	121	310	CONESTOGA CREEK
PA	LANCASTER	120	310	SUSQUEHANNA R
PA	LEBANON	111	310	GOLD MINE CREEK
PA	LEBANON	112	310	FISHING CREEK
PA	LEBANON	113	310	SWATARA CREEK
PA	LEMOYNE	110	310	YELLOW BREECHES
PA	LEMOYNE	109	310	CONODOGUINET CR
PA	LEVITTOWN	138	320	DELAWARE RIVER
PA	LEWISTOWN	102	310	LAUREL RUN
PA	LEWISTOWN	103	310	WEST BROOK
PA	LEWISTOWN	101	310	TREASTER RUN
PA	LOGICAL CITY #3	102	310	JUNIATA RIVER
PA	MCKEESPORT	412	610	YOUGHIOGHENY R
PA	MCKEESPORT	413	610	MONONGAHELA R
PA	MIDDLETOWN TWP	140	320	NESHAMINY CR
PA	MILTON	089	310	WEST BRANCH OF
PA	MILTON	091	310	SPRUCE RUN DAM
PA	MILTON	090	310	WHITE DEER CR
PA	NEW CASTLE	423	610	SHENANGO RIVER
PA	NEW KENSINGTON	395	610	ALLEGHENY RIVER
PA	NORRISTOWN BORO	152	320	SCHUYLKILL R
PA	NORTHAMPTON	132	320	LEHIGH RIVER
PA	NORTHAMPTON	133	320	SPRING CREEK RE
PA	PHILADELPHIA	154	320	DELAWARE RIVER
PA	PHILADELPHIA	153	320	SCHUYLKILL R
PA	PHILADELPHIA	155	320	SCHUYLKILL R
PA	PITTSBURGH	397	610	ALLEGHENY RIVER
PA	PITTSBURGH	414	610	MONONGAHELA R
PA	POTTSTOWN	148	320	SCHUYLKILL R
PA	POTTSVILLE	146	320	EISENHUTH RE
PA	POTTSVILLE	147	320	INDIAN RUN RE
PA	POTTSVILLE	144	320	WOLF CREEK RE
PA	POTTSVILLE	145	320	TAR RUN RE
PA	READING	142	320	ANTOETAM LAKE
PA	READING	143	320	LAKE ONTELAUNEE
PA	SCRANTON	070	310	ELMHURST DAM
PA	SCRANTON	071	310	OAK RUN DAM
PA	SCRANTON	072	310	LAKE HENRY
PA	SCRANTON	073	310	LEHIGH PUMP DAM

STATE	CITY	LINE NO	PUB	SOURCE WATER
SC	GREENVILLE	257	470	TABLE ROCK COVE
SC	GREENVILLE	256	470	N SALUDA RE
SC	GREENWOOD	258	470	LAKE GREENWOOD
SC	LANCASTER	267	470	CATAWBA RIVER
SC	ORANGEBURG	254	460	N FORK
SC	ROCK HILL	266	470	CATAWBA RIVER
SC	SPARTANBURG	260	470	SOUTH PACOLET R
SD	ABERDEEN	348	610	ELM RIVER AND
TN	BRISTOL	475	610	SOUTH HOLSTON
TN	CHATTANOOGA	487	610	TENN RIVER
TN	CLARKSVILLE	473	610	CUMBERLAND R
TN	CLARKSVILLE	474	610	BIG WEST FORK C
TN	CLEVELAND	486	610	HIWASEE RIVER
TN	COLUMBIA	491	610	DUCK RIVER
TN	JOHNSON CITY	476	610	WATAGUA RIVER
TN	JOHNSON CITY	477	610	PATRIC HENRY R
TN	KINGSPORT	478	610	SOUTH HOLSTON R
TN	KNOXVILLE	485	610	MELTON HILL RE
TN	KNOXVILLE	484	610	BEAVER CREEK
TN	KNOXVILLE	482	610	TENNESSEE RIVER
TN	MARYVILLE	483	610	LITTLE RIVER
TN	MORRISTOWN	479	610	CHEROKEE LAKE
TN	MURFREESBORO	470	610	STONES RIVER
TN	NASHVILLE	471	610	CUMBERLAND R
TN	NASHVILLE	472	610	CUMBERLAND R
TX	ABILENE	544	650	LAKE FT PHANTO
TX	ABILENE	545	650	LAKE KIRBY
TX	ABILENE	546	650	LAKE ABILENE
TX	BROWNSVILLE	534	620	RIO GRANDE R
TX	BRYAN	549	650	BRAZOS RIVER
TX	CORPUS CHRISTI	550	660	NUECES RIVER
TX	DALLAS	542	640	TRINITY RIVER
TX	DALLAS	539	640	LAKE RAY HUBBAR
TX	DALLAS	540	640	GRAPEVINE RE
TX	DALLAS	541	640	LITTLE ELM RE
TX	EL PASO	531	620	RIO GRANDE R
TX	FORT WORTH	537	640	CEDAR CREEK LAKE
TX	FORT WORTH	538	640	BEN BROOK LAKE
TX	FORT WORTH	536	640	EAGLE MT RE
TX	GARLAND	543	640	LAKE LAVON
TX	HARLINGEN	533	620	RIO GRANDE R
TX	HOUSTON	528	615	LAKE HOUSTON
TX	INGLESIDE	551	660	NUECES RIVER
TX	LAREDO	532	620	RIO GRANDE R

STATE	CITY	LINE NO	PUB	SOURCE WATER
PA	SCRANTON	062	310	SUMMIT LAKE
PA	SCRANTON	063	310	LK SCRANTON OVF
PA	SCRANTON	064	310	WILLIAMS BR RE
PA	SCRANTON	065	310	HAZARD POND
PA	SCRANTON	066	310	MARSHWOOD DAM
PA	SCRANTON	067	310	DUNMORE NO3 DAM
PA	SCRANTON	068	310	DUNMORE NO4 DAM
PA	SCRANTON	069	310	LAKE SCRANTON
PA	SHAMOKIN	092	310	BRUSH VALLEY RE
PA	SHAMOKIN	094	310	BEAR GAP #1 & #
PA	SHAMOKIN	093	310	TROUT RUN #4
PA	SHAMOKIN	095	310	#6 RESERVOIR
PA	SHARON	422	610	SHENANGO RIVER
PA	UNIONTOWN	406	610	RIVER STATION Y
PA	UNIONTOWN	407	610	YOUGHIOGHENY R
PA	W CHESTER	156	320	CHESTER CREEK
PA	WILKES BARRE	084	310	FOREST CITY-LAC
PA	WILKES BARRE	085	310	BRACE BROOK RE
PA	WILKES BARRE	075	310	WANAMIE RESERVOIR
PA	WILKES BARRE	082	310	PINE RUN
PA	WILKES BARRE	077	310	LAUREL RUN RE
PA	WILKES BARRE	078	310	OLYPHANT RE
PA	WILKES BARRE	076	310	WHITE OAK RE
PA	WILKES BARRE	079	310	CHENERY RE
PA	WILKES BARRE	081	310	RUSHBROOK RE
PA	WILKES BARRE	083	310	FALL BROOK RE
PA	WILKES BARRE	074	310	CRYSTAL LAKE RE
PA	WILKES BARRE	080	310	GRIFFIN LAKE
PA	WILKINSBURG	396	610	ALLEGHENY RIVER
PA	WILLIAMSPORT	086	310	HAGERMAN RUN
PA	WILLIAMSPORT	087	310	LYCOMING CREEK
PA	WILLIAMSPORT	088	310	MOSQUITO CREEK
PA	YORK	119	310	YORK RE
PA	YORK	117	310	SOUTH BRANCH CO
RI	BRISTOL	694	161	KICKAMUIT RE
RI	PROVIDENCE	695	162	PAWTUXET RIV SC
RI	WOONSOCKET	696	162	MILL RIVER
SC	AIKEN	252	460	SHILOH SPRINGS
SC	AIKEN	251	460	SHAWS CREEK
SC	ANDERSON	249	450	LAKE HARTWELL
SC	CHARLESTON	253	460	EDISTO RIVER
SC	CHARLESTON	255	465	GOOSE CREEK
SC	COLUMBIA	261	470	BROAD RIVER
SC	COLUMBIA	259	470	SALUDA RIVER

STATE	CITY	LINE NO	PUB	SOURCE WATER
TX	LONGVIEW	769	690	LAKE CHEROKEE
TX	LUBBOCK	506	610	S CANADIAN R
TX	NOLANVILLE	548	650	LAKE BELTON
TX	SAN ANGELO	552	670	COLORADO RIVER
TX	SAN ANGELO	554	670	TWIN BUTES RE
TX	SAN ANGELO	553	670	NORTH CONCHO R
TX	TEMPLE	547	650	BELTON LK
TX	TEXARKANA	519	610	WRIGHT PATTMAN
TX	TYLER	555	680	LAKE TYLER
UT	OGDEN	774	820	WHEELER C
UT	OGDEN	773	820	WEBER BASIN CON
UT	OGDEN	772	820	PINE VIEW RE
UT	SALT LAKE	776	830	CITY CREEK
UT	SALT LAKE	778	830	BIG COTTONWOOD
UT	SALT LAKE	775	830	PARLEYS CREEK
UT	SALT LAKE	777	830	LITTLE COTTONWO
VA	ANNANDALE	190	380	OCCOQUAN RIVER
VA	CHARLOTTSVILLE	185	370	RAGGED MOUNTAIN
VA	CHARLOTTSVILLE	186	370	SUGAR HOLLOW RE
VA	CHARLOTTSVILLE	187	370	S FORK RIVANNA
VA	CHESTERFIELD	189	370	FALLING CREEK
VA	CHESTERFIELD	179	360	APPOMATTOX RVR
VA	CHESTERFIELD	180	360	SWIFT CREEK
VA	DANVILLE	246	445	DAN RIVER
VA	FAIRFAX	177	350	GOOSE CREEK
VA	HOPEWELL	181	360	APPOMATTOX R
VA	LYNCHBURG	184	370	JAMES RIVER
VA	LYNCHBURG	183	370	PEDLAR RESERVOIR
VA	PETEPSBURG	182	360	LAKE CHESDIN
VA	RICHMOND	188	370	JAMES RIVER
VA	ROANOKE	248	445	CARVINS COVE
VA	ROANOKE	247	445	FALLING CREEK RE
VT	BURLINGTON	719	232	LAKE CHAMPLAIN
VT	SOUTH BURLINGTON	718	232	LAKE CHAMPLAIN
WA	BELLINGHAM	634	080	LAKE WHATCOM
WA	BREMERTON	635	090	UNION RIVER
WA	EVERETT	633	070	SULTAN RIVER
WA	LONGVIEW	008	020	COWLITZ RIVER
WA	MOUNT VERNON	625	015	SKAGIT RIVER
WA	RICHLAND	005	020	COLUMBIA RIVER
WA	SEATTLE	631	060	CEDAR RIVER RE
WA	SEATTLE	632	070	TOLT RIVER
WA	TACOMA	630	050	GREEN RIVER
WA	WALLA WALLA	007	020	MILL CREEK

STATE	CITY	LINE NO	PUB	SOURCE WATER
WA	YAKIMA	006	020	NACHES RIVER
WI	APPLETON	274	500	LAKE WINNEBAGO
WI	GREEN BAY	277	500	LAKE MICHIGAN
WI	KENOSHA	282	500	LAKE MICHIGAN
WI	MANITOWOC	278	500	LAKE MICHIGAN
WI	MILWAUKEE	280	500	LAKE MICHIGAN
WI	OSHKOSH	273	500	LAKE WINNEBAGO
WI	RACINE	281	500	LAKE MICHIGAN
WI	SHEBOYGAN	279	500	LAKE MICHIGAN
WI	SUPERIOR	276	500	LAKE SUPERIOR
WV	BECKLEY	435	610	GLADE CK IMPOUN
WV	CHARLESTON	436	610	ELK RIVER
WV	FAIRMONT	398	610	TYGART VALLEY R
WV	HUNTINGTON	437	610	OHIO RIVER
WV	MORGANTOWN	400	610	MONONGAHELA R
WV	MORGANTOWN	399	610	COBUN CREEK
WV	WHEELING	431	610	OHIO RIVER
WY	CASPER	352	610	N PLATTE RIVER
WY	CHEYENNE	336	610	DOUGLAS RE
WY	CHEYENNE	560	910	LITTLE SNAKE 10
WY	CHEYENNE	779	850	CRYSTAL LAKE

APPENDIX B

DATA SOURCE PROFILES

- Municipal Waste Facilities Inventory File
- Survey of NEEDS for Municipal Water Treatment Facilities
- Permit Compliance System
- Inventory of Public Water Supplies
- National Water Data Exchange
- City Master File

MUNICIPAL WASTE FACILITIES INVENTORY FILE

The Municipal Waste Facilities Inventory (MWFI) File contains data on publicly owned wastewater treatment systems. The file is maintained at the EPA Washington Computer Center in Washington, D.C. System manager is Charles Conger (202/ 426-7792) and data processing representative is Joyce Boyd. Data sources are regional and state inventories of facilities. The file contains data for about 24,000 plants; however, it has been recently updated only for EPA Region IV.

The following table presents the list of MWFI data elements. Those which were used on input data to this project are marked with an asterisk.

INVENTORY OF MUNICIPAL WASTES FACILITIES AND FACILITY NEEDS

Record Location	Field Size in Bytes	Unit Record Description
1-2	* 2	STATE CODE - ALWAYS NUMERIC
3-7	5	COMMUNITY NUMBER - ALWAYS NUMERIC
8-11	4	FACILITY NUMBER - ALWAYS NUMERIC
12	1	DISCHARGE NUMBER - ALWAYS NUMERIC MAY ALSO BE USED TO FURTHER IDENTIFY A NEED RECORD - POSITION 13 WOULD ALSO BE NUMERIC
13	1	FACILITY NEED NUMBER - ALWAYS NUMERIC IF >"1" RECORD IS A NEED RECORD ONLY AND NOT AN EXISTING FACILITY RECORD
14-16	* 3	COUNTY NUMBER - ALWAYS NUMERIC
17-20	4	PRIORITY BASIN
21-23	3	IGNORE
24-26	3	WATER QUALITY/EFFLUENT LIMITATIONS
27-30	4	* STANDARD METROPOLITAN STATISTICAL AREA (SMSA CODE FROM FIPS PUBLICATION) NUMERIC
31-32	2	IGNORE
33-52	20	FACILITY NAME PART 1 - ALPHA
53-72	* 20	FACILITY NAME PART 2 - ALPHA
73-92	20	COUNTY NAME - ALPHA
93-94	2	OLD FWCA REGION NUMBER (01-09) - NUMERIC
95-96	2	* CONGRESSIONAL DISTRICT - NUMERIC
97-104	8	* CENSUS OF COMMUNITY - NUMERIC
105	1	CENSUS YEAR - NUMERIC (6=1960;7=1970)
106-113	8	STATE DISCHARGE PERMIT NUMBER - ALPHA
114-115	2	* MULTI/TYPE POINT DISCHARGE - NUMERIC (11=1 OF 1; 13=1 OF 3; ETC.)
116-139	24	DISCHARGE OUTFALL NAME PART 1 - ALPHA
140-163	24	DISCHARGE OUTFALL NAME PART 2 - ALPHA
164-165	2	MAJOR BASIN NUMBER _ NUMERIC
166-167	2	* MINOR BASIN NUMBER - NUMERIC
168-169	2	* SUB BASIN NUMBER - NUMERIC
170	1	* INTER/INTRA STATE STREAM - NUMERIC (1 = INTERSTATE; 0 = INTRASTATE)
171	1	* OUTFALL TO LARGE OPEN WATER BODY NUMERIC (1 = YES)
172-184	* 13	* LAT/LONG OF DISCHARGE POINT - NUMERIC (POSITIONS 1-6 = LATITUDE) (POSITIONS 7-13 = LONGITUDE)
185-189	5	* DISTANCE OUTFALL FROM SHORE OR BANK (POSITIONS 1-4 = DISTANCE; POSITION 5 = " F " OR " M "; SEE INSTRUCTIONS " PART B " PAGE 6)
190-192	3	* DEPTH OF OUTFALL SUBSURFACE - NUMERIC (SEE INSTRUCTIONS " PART B " PAGE 7)
193	1	* SERVES OTHER COMMUNITIES - NUMERIC (1 = YES)
194	* 1	* SERVED BY ANOTHER COMMUNITY - NUMERIC (1 = YES)

195-202		8	• CENSLS OF SERVING COMMUNITY - NUMERIC
203		1	YEAR OF CENSUS - NUMERIC (6 = 1960; 7 = 1970)
204-209		6	CATE OF THIS REPORT - NUMERIC (SEE INSTRUCTIONS " PART B " PAGE 4)
210-365	*	156	CONSTRUCTION GRANTS NUMBERS AWARDED (26) 6 - CHARACTER FIELDS • POSITICN 1-4: NUMERIC GRANT NUMBER POSITION 5: WPC NUMBER POSITICN 6: SOURCE OF GRANT SEE INSTRUCTIONS " PART B " PAGES 7 AND 8
366		1	• TYPE SEWER SYSTEM - NUMERIC
367-374	*	8	• ESTIPATED POPULATION SERVED - NUMERIC (POSITION 1 = " • " IF FACILITY IS BEING SERVED)
375-377	*	3	• DEGREE OF TREATMENT - ALPHANUMERIC (POSITIONS 1-2: NUMERIC POSITION 3: ALPHA) SEE REVISED INSTRUCTIONS " PART B "
378-379		2	IGNORE
380-381		2	• YEAR PLANT BEGAN OPERATION - NUMERIC
382-383		2	IGNORE
384-385		2	• YEAR MAJOR REVISION OF PLANT - NUMERIC
386-389		4	• ESTIMATED ANNUAL COST OF O&M - NUMERIC (999V9)
390-396		7	• AVERAGE CILY FLOW (DESIGN MGD) - NUMERIC (9999V999)
397-403	*	7	• AVERAGE CAILY FLOW (ACTUAL MGD) - NUMERIC (9999V999)
404-406	*	3	• PERCENT INDUSTRIAL FLOW - NUMERIC
407-412		6	• PLANT DESIGN BCD LOAD MG/L - NUMERIC
413-418	*	6	• PLANT ACTUAL BOD LOAD MG/L - NUMERIC
419-420		6	• PERCENT INDUSTRIAL BOD LOAD - NUMERIC
421-426	*	6	• PERCENT TREATIO EFFLUENT BOD MG/L - NUMERIC
427-432		6	• PERCENT SUSPENDED SOLIOS INFLUENT MG/L - NUMERIC
433-438		6	• PERCENT SUSPENDED SOLIOS EFFLUENT MG/L - NUMERIC
439-441		3	• PERCENT NITROGEN REMOVAL - NUMERIC
442-444		3	• PERCENT PHCSPHORUS REMOVAL - NUMERIC
445-468		24	ALPHA TREATMENT CCDES PART 1 - ALPHA SEE INSTRUCTIONS " PART B " PAGE 12 SEE APPENDIX B FOR CODES USED
469-492		24	ALPHA TREATMENT CODES PART 2 - ALPHA SEE INSTRUCTICNS " PART B " PAGE 12 SEE APPENDIX B FOR CODES USED
493-516		24	FACILITY REMARKS PART 1 - ALPHA
517-540		24	FACILITY REMARKS PART 2 - ALPHA
541-546		6	• IMPLEMENTATION REVIEW DATE - NUMERIC (YRMODAY)
547-548		2	• MULTI DATES FOR NEEDS - NUMERIC (11 = 1 OF 1; 12 = 1 OF 2; ETC) SEE INSTRUCTIONS " PART B " PAGE 12
559-560		2	• CONFORMANCE PLAN - NUMERIC SEE INSTRUCTIONS " PART B " PAGE 13 FOR DESCRIPTION OF CODES
561-567		7	• TOTAL ESTIMATED COST ($1000) - NUMERIC

SURVEY OF NEEDS FOR MUNICIPAL WATER TREATMENT FACILITIES

The 1976 survey of NEEDS system provides data on publicly owned treatment works in terms of location, treatment type, and effluent flow. The file is maintained at the EPA Washington Computer Center in Washington, D.C. System manager is James Chamblee (202/ 426-4443). Data source was a 34-page questionnaire sent to 17,000 facilities. Most major facilities are included.

A brief description of the data elements is presented below with those used for this project marked with an asterisk.

NEEDS SURVEY NUMBER

This is a nine digit number. The first two digits are a coded number from the Federal Information Processing Standard for Designating States and Outlying Areas of the United States (FIPS-5), and designates a particular state. The next four numbers are assigned sequentially by each state agency. The last three numbers are assigned by the authority to the facility.

FACILITY NAME

The official name of the facility which is legally used to identify it.

AUTHORITY NAME

The official name of the authority which is legally used to identify it.

*NPDES NUMBER

The National Pollutant Discharge Elimination System permit number, assigned through the EPA permit program.

BASIN NUMBER

This four digit number shows the EPA major/minor basin codes.

245 NUMBER

This thirteen digit number is the Municipal Waste Facility Inventory number.

SAMPLE

If this box is checked, the facility was part of the sample used by some states for communities of less than 10,000 population outside Standard Metropolitan Statistical Areas (SMSA's).

FACILITY LOCATION

The state location is the same two digit FIPS-5 number used in the authority number. The county location is based on the FIPS-6 codes. The place location number is derived from the "Geographic Identification Place Scheme" developed by the Census Bureau, and is a four digit number.

CONGRESSIONAL DISTRICT

The number of the Congressional District in which the facility was located in 1976.

SUBMISSION CODE

This is a one digit number which indicates whether the facility needs have had no change since the 1974 Survey, were not reported, or have been changed.

*CITY

The city in which the facility is located.

*COUNTY

The county in which the facility is located.

ZIP CODE

The official Post Office Zip Code of the facility.

*FACILITY STATUS

This shows by a one digit code whether the facility is currently in operation or not in operation. Facilities not in operation are usually either currently proposed or under construction.

Nature of Facility

This is a one digit code which stands for the type of facility.

*Construction Grant Status

This one digit code shows if there is a construction grant approved or pending, or if there are no applicable grants.

Projected Change

This one digit code shows projected physical changes for the facility, i.e., if the facility will be enlarged, upgraded, replaced, abandoned, etc.

*Abandonment Date

The appropriate date is filled in only if the facility will be abandoned.

SUMMARY OF CATEGORY NEEDS

This section is used to record the costs for Categories I-IVB. Column (a) is for the EPA assessment, column (b) is for the state estimate, and column (c) is the portion required to satisfy "backlog" facility requirements. "Backlog" refers to facility requirements that are established on the basis of current rather than 1990 population. The basis of estimate in the last column is a one digit code which specifies the basis of the cost estimation.

*FACILITY POPULATION

This section shows the population which receives treatment and/or collection from the facility. Both are broken down by present resident population, present non-resident population, projected resident population, projected non-resident population.

NEED FOR NEW COLLECTORS, INTERCEPTORS, FORCE MAINS, AND PUMPING STATIONS

This section lists codes for new collectors, interceptors, force mains and pumping stations, and their costs. The diameter of pipe is in inches, the length in feet, and the capacity is in millions of gallons per day (MGD). These have been converted in the technical summaries to metric units.

DISPOSAL OF LIQUID EFFLUENTS

"Disp," "use," and "chng" are all one digit codes indicating the type of disposal, whether the facility is now in use, under construction, etc., and whether or not there will be a physical change, i.e., enlarge, upgrade, etc.

REQUIRED INFILTRATION/INFLOW CORRECTIVE ACTION

"Code" is a one digit number showing the type of corrective action. "Basis" stands for the Basis of Estimate, referred to previously.

ESTIMATED INFILTRATION/INFLOW COMPONENT

This number is the total flow component (MGD) due to infiltration/inflow.

MAJOR REHABILITATION/REPLACEMENT REQUIRED

"Code" is a one digit code standing for type of corrective action. "Basis" is the Basis of Estimate.

DO WASTEWATERS ORIGINATE IN COMMUNITIES EXISTING BEFORE OCTOBER 18, 1972?

This is self-explanatory and is answered by a "yes" or "no."

1972 COLLECTION POPULATION

This figure is the actual 1972 population requiring new collector sewers.

*FLOWS, CONCENTRATION, AND REMOVAL RATES

This section is for monthly average flow or concentration figures in terms of the existing rate, the present design rate, and projected design rate for the following categories:

1. total flow in million gallons per day (MGD)
2. total industrial flow in million gallons per day (MGD)
3. domestic flow per capita in gallons per capita per day (gpcd)

Below these figures, influent and effluent concentrations are shown for five-day Biological Oxygen Demand (milligrams per liter), suspended solids (milligrams per liter), phosphorus (milligrams per liter), total kjeldahl nitrogen (milligrams per liter), total nitrogen (milligrams per liter), and any others.

DOES DISCHARGE MEET SECONDARY?

Whether or not the discharge currently meets secondary treatment standards is answered by a "yes" or "no."

WILL DISCHARGE MEET SECONDARY BY JULY 1, 1977?

Whether or not the discharge will meet secondary treatment by July 1, 1977 is answered by a "yes" or "no".

IS REQUIRED TREATMENT LEVEL MORE STRINGENT THAN SECONDARY?

REASON

Whether or not the required treatment level is more stringent than secondary treatment standards is answered by a "yes" or "no". If yes, a one digit code is entered under "REASON".

*TREATMENT AND SLUDGE HANDLING

There are three columns in this section. The first column is for type of treatment and sludge handling (unit process), the second column is for the current use, and the third column shows projected change.

PERMIT COMPLIANCE SYSTEM

The Permit Compliance System (PCS) contains the universe of facilities for which effluent discharge permits have been issued. The system is maintained at the EPA Washington Computer Center in Washington D.C. The system manager is William Milligan (202/755-0994) and the data processing representative is Carroll Barrett. The file contains data on about 60,000 industrial and municipal facilities with respect to general location and type of activity (SIC code).

The following table presents the list of PCS data elements. Those which were used on imput data to this project are marked with an asterisk.

PCS DATA ELEMENT LIST

PERMIT COMPLIANCE SYSTEM DATA ELEMENT	DATA TYPE	ABBR.	NO. OF DIGITS	
			10/30 CARD	40 CARD
REGION CODE	F	REGN	2	5
* NPDES ID NUMBER	F	NPID	9	10
STATE CODE	F	STTE	2	5
LOCATION, STATE-CITY CODE	F	LCTN	7	8
* SIC CODE (1972)	F	SIC2	4	5
* MAJOR DISCHARGE INDICATOR	F	MADI	1	5
TYPE APPLICATION	F	TYPA	2	5
TYPE OF OWNERSHIP	F	TYPO	3	5
NAME OF FACILITY (SHORT)	F	FNMS	30	31
NAME OF FACILITY (LONG)	F	FNML	120	121
FIRST 30 DIGITS FACILITY NAME	F	NAM1	30	31
SECOND 30 DIGITS FACILITY NAME	F	NAM2	30	31
THIRD 30 DIGITS FACILITY NAME	F	NAM3	30	31
FOURTH 30 DIGITS FACILITY NAME	F	NAM4	30	31
LAST 5 DIGITS FACILITY NAME	F	NAM5	5	6
* CITY NAME	F	CYNM	20	21
* COUNTY CODE	F	CNTY	5	6
* COUNTY NAME	F	CNTN	20	21
RIVER BASIN CODE (2 DIGITS) MAJOR	F	BAS2	2	5
RIVER BASIN CODE (4 DIGITS) MAJOR-MINOR	F	BAS4	4	5
RIVER BASIN CODE (ALL DIGITS)	F	BAS6	6	7
TYPE PERMIT ISSUED EPA/STATE	F	EPST	4	5
PERMIT ISSUE DATE	F	PERD	6	7
PERMIT EXPIRATION DATE	F	PERE	6	7
SUB-REGION CODE	F	SUBR	2	5
NEW SOURCE CODE	F	NEWS	2	5
INSPECTION DATE	I	DTIN	6	7
INSPECTION TYPE	I	TYPI	1	5
INSPECTOR CODE	I	INSP	1	5
FACILITY CODE	I	FACC	1	5
INSPECTION COMMENTS	I	ICOM	50	51
COMPLIANCE SCHEDULE NUMBER	C	CSCH	2	5
DATA SOURCE CODE	C	DSCD	4	5
EVENT CODE	C	EVNT	3	5
EVENT DESCRIPTION	C	EDES	30	31
COMPLIANCE COMMENTS	C	COMM	30	31
COMPLIANCE SCHEDULED DATE	C	DTSC	6	7
COMPLIANCE ACTUAL DATE	C	DTAC	6	7
DISCHARGE NUMBER	D	DSCH	3	5
DMR REPORT DESIGNATOR	D	DRID	1	5
INITIAL REPORT DATE	D	STRP	6	7
REPORT UNIT	D	REUN	1	5
NO. OF UNITS IN REPORTING PERIOD	D	NRPU	3	5
TOTAL NO. OF REPORTS DUE	D	NORP	3	5
INITIAL SUBMISSION DATE (EPA)	D	STSU	6	7
SUBMISSION UNIT (EPA)	D	SUUN	1	5
NO. OF UNITS IN SUBMISSION PERIOD (EPA)	D	NSUN	3	5
INITIAL SUBMISSION DATE (STATE)	D	STSS	6	7
SUBMISSION UNIT (STATE)	D	SUUS	1	5
NO. OF UNITS IN SUBMISSION PERIOD (STATE)	D	NSUS	3	5
FORECAST SUBMISSION DUE DATE (EPA) *	D	SUDU*	6	-
FORECAST SUBMISSION DUE DATE (STATE) **	D	SUDS**	6	-

* SE REPORT ONLY ** SS REPORT ONLY

THE INVENTORY OF PUBLIC WATER SUPPLIES

The Inventory of Public Water Supplies (IPWS) contains data on about 60,000 water supply systems. The file is maintained at the EPA Washington Computer Center in Washington D.C. System Manager is Patrick Tobin. Data source was a questionnaire which included: utility name, owner, characteristic of supply and capacity and production, population served, source water and type of treatment.

The following list presents the data elements included. Those which were used as input data to this project are marked with an asterisk.

IPWS DATA ELEMENTS

*1. IDENTIFICATION NUMBER - This is a 14 digit code number that geographically identifies the location of the utility.

*2. NAME OF WATER UTILITY - This is the complete, official name of the utility.

*3. ADDRESS - This is the mailing address of the utility (this may be but does not necessarily have to be the physical location of the treatment plant).

*4. CITY, COUNTY, STATE - This is the city, county and state of the mailing address of the utility.

*5. ZIP CODE - This is the zip code of the mailing address of the utility.

6. IS THE UTILITY OWNED BY A MUNICIPALITY, DISTRICT, INVESTOR OWNER, STATE OR OTHER?

*7. RETAIL POPULATION SERVED-NUMBER SERVICES, METERS - The most current information available. Does not include the population served by water utilities that purchase water from you wholesale.

8. NUMBER OF WHOLESALE CUSTOMERS - For cases where water is sold to wholesale customers.

*9. WHAT IS THE CHARACTERISTIC(S) OF YOUR SERVICE AREA?

10. CAPACITIES - The most current information available.

*11. PRODUCTION - The most current information available.

12. DATE FORM COMPLETED

*13. REMARKS

*14. SOURCE AND TREATMENT - The names of the river, lake, other utility, well field, or other sources from which the supply of water is taken. The types of treatment rendered the raw water for each source.

*15. INTAKE LOCATION - Latitude and longitude of intake and river basin.

*16. LABORATORY CONTROL - Place an X in the box for the type or types of laboratory analyses made at the treatment facility. Leave these blocks blank if no laboratory analyses are performed.

NATIONAL WATER DATA EXCHANGE

A variety of services are provided by NAWDEX to assist its users to identify needed water data, to locate these data and to refer users to the proper sources for obtaining the data. It is not a function of NAWDEX to become a repository of water data. Instead, the data held by NAWDEX members are indexed by the Program Office to provide a central source of information on water data available from a large number of organizations.

The NAWDEX system identifies domestic and foreign organizations that are sources for water data. This system identifies how the data can be obtained from these organizations, and basically what geographic region the organization provides water data for.

The NAWDEX system also provides a Master Water Data Index which was created in June 1976 with information on 62,000 water-data sites. Computerized interfaces developed between the Index and data files of NAWDEX members increased its contents to information on about 350,000 sites in 1977. Information on nearly 1 million sites is presently available. This index provides information indicating on what sites data is available, their location, the data collecting organization, the types of data available, periods of time for which data is available, the major water data parameters, the frequency of measurement, and the media in which the data is stored. This Index is maintained on the USGS computing system in Reston, Virginia, and is accessible by most local assistance centers by remote computer terminal.

The WATSTORE file is a subsystem of the NAWDEX system. It provides information on the physical characteristics of the water in question. It not only provides chemical information, but also environmentally influencing factors such as rainfall, air temperature, and wind velocity. This file was the NAWDEX subsystem used for this study of wastewater impacts.

CITY MASTER FILE

The City Master File (CMF) contains primary statistics and census data on U. S. cities. The file is maintained at the EPA Washington Computer Center in Washington, D.C. The system manager is Phillip Taylor (202/426-7760).

The following table presents the list of CMF data elements. Those which were used as input data to this project are marked with an asterisk.

EPA CITY MASTER FILE

Element #	Positions	Length	Name
*1	1-2	2	New state number
*2	3-5	3	New county number
*3	6-11	6	Latitude
*4	12-18	7	Longitude
5	19-20	2	Old state number
6	21-25	5	City number
7	26-29	4	Record number
8	30	1	Record code
9	31-32	2	EPA Major basin
10	33-34	2	EPA Minor basin
11	35-36	2	EPA Sub basin
*12	37-40	4	SMSA
*13	41-66	26	Community name - part 1
*14	67-92	26	Community name - part 2
15	93-95	3	Old county number
*16	96-114	19	County name
17	115	1	FWQA Population size group
*18	116-123	8	1960 Census
*19	124-131	8	1970 Census
20	132	1	Contract Awards PSG
21	133	1	Sanitary District code
22	134-135	2	Congressional District code
23	136	1	FWQA PSG (1970)
24	137	1	Contract Awards PSG (1970)
25	138-142	5	Study category
26	143-147	5	Computer category
27	148	1	Latitude/Longitude flag
28	149-154	6	Date of update

APPENDIX C

WASTEWATER IN DRINKING WATER, BY PERCENTAGE AND TYPE, FOR UTILITIES WITH GREATEST IMPACTS

This appendix presents an alphabetical listing of the utilities in Tables 5 and 7 of the text.

```
                                SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, 82377
DATE: 12/22/78                                                                                                   PAGE:  404

                                                                                                      RETAIL POPULATION
PUB            UTILITY NAME                UTILITY ID NO.   RECORD CODE  STATE  COUNTY  CITY          SERVED (X 1,000)
------------------------------------------------------------------------------------------------------------------------------
610   ALTON WATER CO                       17016201510000    000412      IL     001    ALTON                57

   RECORD KEY: 000413          ******************** E F F L U E N T   D I S C H A R G E ****************************************
                               *
   SOURCE:  MISS RIVER         *                         PRIMARY       SECONDARY       TERTIARY        UNKNOWN           TOTAL  *
                               * DISCHARGE FLOW,(CFS)                                                                             *
   ZERO WASTE CODE: 1          *         NEXT ADJACENT:       11             153              2              0              166  *
                               *                                                                                                  *
   LATITUDE: 385345            *            CUMULATIVE: - - - - 115     - - - 2.952     - - - - - 32    - - - - - 95      - - - 3.194  *
                               *                                                                                                  *
   LONGITUDE: 0901211          *   PERCENT WASTEWATER                                                                             *
                               *         AVERAGE FLOW:  - - - . 1       - - 3 . 0       - - - . 0       - - - . 1         - - 3 . 2  *
                               *                                                                                                  *
                               *             LOW FLOW:  - - - . 6       - - 14 . 2      - - - . 2       - - - . 4         - - 15 . 4  *
   AVERAGE FLOW:  98,570 CFS   *                                                                                                  *
                               * NO. OF DISCHARGERS                                                                               *
   LOW FLOW:  20,801 CFS       *        NEXT ADJACENT:        9              105              3            179              296  *
                               *            WITH FLOW:        9              103              3              0              117  *
                               *                                                                                                  *
                               *           CUMULATIVE: - - - - 92/90 - - - - 618/592 - - - - - 26/23 - - - - 831/67 - - - 1.567/772*
                               *                                                                                                  *
                               ****************************************************************************************************

   NUMBER OF INDUSTRIAL
   DISCHARGERS *****************************************************************************************************************
   *                    1     * 2         * 3         * 4         * 5         * 6         * 7         * 8         * 9         * 10        * 11        *
   * NEXT ADJACENT:      49   *       24  *        7  *        1  *        2  *        4  *        3  *        0  *        1  *        1  *        0  *
   *                          *           *           *           *           *           *           *           *           *           *           *
   *    CUMULATIVE: - - 170   * - - - 37  * - - - 36  * - - 166   * - - - 24  * - - - 18  * - - - 37  * - - - 1   * - - - 43  * - - - 9   * - - - 9   *
   *                          *           *           *           *           *           *           *           *           *           *           *
   *                   12     * 13        * 14        * 15        * 16        * 17        * 18        * 19        * 20        * 21        * 22        *
   * NEXT ADJACENT:       3   *        0  *        9  *        0  *        2  *        0  *        0  *        6  *        0  *        0  *        0  *
   *                          *           *           *           *           *           *           *           *           *           *           *
   *    CUMULATIVE: - - - 60  * - - - 16  * - - - 48  * - - - 25  * - - - 23  * - - - 5   * - - - 2   * - - - 47  * - - - 18  * - - - 4   * - - - 1   *
   *                          *           *           *           *           *           *           *
   *                   23     * 24        * 25        * 26        * 27        * 28        *  TOTAL    *
   * NEXT ADJACENT:      23   *        1  *       31  *        1  *      362  *      254  *     784   *
   *                          *           *           *           *           *           *           *
   **** CUMULATIVE: - - 124   * - - - 15  * - - 165   * - - - 5   * - 1.667   * - 1.087   * - 4.037   *

   DOWNSTREAM
    UTILITY         U P S T R E A M     U T I L I T Y     I D E N T I F I C A T I O N     N U M B E R S

   29714001560000   17648601500000  17741601500000  17079201500000  00000000000000  17200401500000  00000000000000

                    17618001500000  00000000000000
```

```
TE: 12/22/78                SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, S2377
                                                                                                         PAGE:   457
B              UTILITY NAME                UTILITY ID NO.   RECORD CODE  STATE  COUNTY  CITY             RETAIL POPULATION
---------------------------------------------------------------------------------------------------------SERVED (X 1,000)
500   APPLETON                             55025001500000      001676      WI     005    APPLETON        ----------------
                                                                                                             54
   RECORD KEY: 001677        ******************* E F F L U E N T   D I S C H A R G E *************************************
                             *                                                                                            *
   SOURCE: LAKE WINNEBAGO    *                             PRIMARY      SECONDARY      TERTIARY       UNKNOWN        TOTAL *
                             * DISCHARGE FLOW,(CFS)                                                                        *
   ZERO WASTE CODE: 1        *            NEXT ADJACENT:      11            97              0             25           133 *
                             *                                                                                            *
   LATITUDE: 440100          *               CUMULATIVE: -----11      -----97       -----0       -----25       ----133 *
                             *                                                                                            *
   LONGITUDE: 0883200        *   PERCENT WASTEWATER                                                                      *
                             *             AVERAGE FLOW:  ---.3         --2.4          ---.0         ---.6         --3.3 *
                             *                                                                                            *
   AVERAGE FLOW:  4,016 CFS  *                LOW FLOW:  --1.1         --9.7          ---.0         --2.5         --13.3 *
                             * NO. OF DISCHARGERS                                                                          *
   LOW FLOW:   1,000 CFS     *          NEXT ADJACENT:       7            26              1             11            45 *
                             *              WITH FLOW:       7            26              1              5            39 *
                             *                                                                                            *
                             *             CUMULATIVE: -----7/7    -----26/26    -----1/1      -----11/5     -----45/39 *
                             *                                                                                            *
                             ***********************************************************************************************
   NUMBER OF INDUSTRIAL
   DISCHARGERS ***************************************************************************************************************
   *                  1     * 2        * 3        * 4        * 5        * 6        * 7        * 8       * 9       * 10      * 11      *
   * NEXT ADJACENT:       4 *       0' *        2 *        9 *        8 *        1 *        1 *       0 *       3 *       2 *       0 *
   *                        *          *          *          *          *          *          *         *         *         *         *
   *    CUMULATIVE: ---4    * -----    * ---2     * ---9     * ---8     * ---1     * ---1     * -----   * ---3    * ---2    * -----   *
   *                        *          *          *          *          *          *          *         *         *         *         *
   *                 12     * 13       * 14       * 15       * 16       * 17       * 18       * 19      * 20      * 21      * 22      *
   * NEXT ADJACENT:      21 *        3 *        0 *        3 *        0 *        0 *        0 *       2 *       0 *       0 *       0 *
   *                        *          *          *          *          *          *          *         *         *         *         *
   *    CUMULATIVE: ---21   * ---3     * -----    * ---3     * -----    * -----    * -----    * ---2    * -----   * -----   * -----   *
   *                        *          *          *          *          *          *          *
   *                 23     * 24       * 25       * 26       * 27       * 28       *  TOTAL   *
   * NEXT ADJACENT:       0 *        0 *       25 *        0 *       54 *       36 *    174   *
   *                        *          *          *          *          *          *          *
   **** CUMULATIVE: -----   * -----    * ---25    * -----    * ---54    * ---36    * --174    *
   DOWNSTREAM
    UTILITY        U P S T R E A M   U T I L I T Y   I D E N T I F I C A T I O N   N U M B E R S

            00              00  00000000000000  00000000000000  00000000000000  00000000000000  00000000000000

                   00000000000000  00000000000000
```

```
TE: 12/22/78            SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, S2377
                                                                                                        PAGE:   253

PUB          UTILITY NAME               UTILITY ID NO,   RECORD CODE  STATE  COUNTY  CITY                RETAIL POPULATION
                                                                                                         SERVED (X 1,000)
------------------------------------------------------------------------------------------------------------------------
310  BALTIMORE CITY-BUREAU WATER SUP    24037901500000     000591      MD     001    BALTIMORE                1755

 RECORD KEY: 000594           ******************** E F F L U E N T   D I S C H A R G E ******************************
                              *                                                                                     *
 SOURCE:  SUSQUEHANNA RIV     *                          PRIMARY      SECONDARY      TERTIARY      UNKNOWN      TOTAL *
                              * DISCHARGE FLOW,(CFS)                                                                *
 ZERO WASTE CODE: 2           *            NEXT ADJACENT:      0              0             0            0          0 *
                              *                                                                                     *
 LATITUDE: 000000             *               CUMULATIVE: _____45      ____434      ______5      _____20      ____504 *
                              *                                                                                     *
 LONGITUDE: 0000000           *   PERCENT WASTEWATER                                                                *
                              *            AVERAGE FLOW:  ___.1        __1.0        ___.0        ___.0        __1.2 *
                              *                                                                                     *
                              *                LOW FLOW:  __1.4        _12.7        ___.1        ___.6        _14.7 *
 AVERAGE FLOW:  42,920 CFS    *                                                                                     *
                              * NO. OF DISCHARGERS                                                                  *
 LOW FLOW:   3,423 CFS        *            NEXT ADJACENT:     0              0             0            0           0 *
                              *               WITH FLOW:      0              0             0            0           0 *
                              *                                                                                     *
                              *             CUMULATIVE: ____29/29 ____113/113 ____8/8  _____81/24 ____231/174*
                              *                                                                                     *
                              ***************************************************************************************
NUMBER OF INDUSTRIAL
DISCHARGERS ***************************************************************************************************************
*               1    * 2      * 3      * 4      * 5      * 6      * 7      * 8      * 9      * 10     * 11     *
* NEXT ADJACENT:     0 *    0 *    0 *    0 *    0 *    0 *    0 *    0 *    0 *    0 *    0 *
*                      *      *      *      *      *      *      *      *      *      *      *
*    CUMULATIVE: ___51 * __86 * __10 * __14 * ___7 * ___2 * ___9 * ___2 * ___7 * ___5 * ___4 *
*                      *      *      *      *      *      *      *      *      *      *      *
*               12     * 13   * 14   * 15   * 16   * 17   * 18   * 19   * 20   * 21   * 22   *
* NEXT ADJACENT:     0 *    0 *    0 *    0 *    0 *    0 *    0 *    0 *    0 *    0 *    0 *
*                      *      *      *      *      *      *      *      *      *      *      *
*    CUMULATIVE: ___13 * ___7 * ___5 * ___3 * ___2 * ____ * ___1 * ___3 * ___2 * ___2 * ___3 *
*                      *      *      *      *      *      *      *
*               23     * 24   * 25   * 26   * 27   * 28   * TOTAL *
* NEXT ADJACENT:     0 *    0 *    0 *    0 *    0 *    0 *     0 *
*                      *      *      *      *      *      *       *
**** CUMULATIVE: ___33 * __12 * ___4 * __64 * _262 * _275 * __888 *

DOWNSTREAM
 UTILITY         U P S T R E A M    U T I L I T Y    I D E N T I F I C A T I O N    N U M B E R S

          00     42132001500000  00000000000000  00000000000000  00000000000000  00000000000000  00000000000000

                 00000000000000  00000000000000
```

```
                          SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, S2377
DATE: 12/22/78                                                                                                    PAGE:   336
                                                                                                           RETAIL POPULATION
PUB          UTILITY NAME                   UTILITY ID NO,   RECORD CODE  STATE  COUNTY  CITY                  SERVED (X 1,000)
------------------------------------------------------------------------------------------------------------------------------
410   BIRMINGHAM WATER BOARD                01078001500000     000003       AL     009   BIRMINGHAM                   650

   RECORD KEY: 000005        ******************** E F F L U E N T   D I S C H A R G E ****************************************
                             *                                                                                               *
   SOURCE:  CAHABA RIVER     *                                   PRIMARY      SECONDARY       TERTIARY       UNKNOWN       TOTAL *
                             * DISCHARGE FLOW,(CFS)                                                                          *
   ZERO WASTE CODE: 1        *             NEXT ADJACENT:           0              8              0              0             8 *
                             *                                                                                               *
   LATITUDE: 332621          *                 CUMULATIVE: _ _ _ _ _0     _ _ _ _ _8     _ _ _ _ _0     _ _ _ _ _0     _ _ _ _ _8 *
                             *                                                                                               *
   LONGITUDE: 0864400        *   PERCENT WASTEWATER                                                                          *
                             *             AVERAGE FLOW:   _ _ _ . 0     _ _ 3 . 6      _ _ _ . 0      _ _ _ . 0      _ _ 3 . 6 *
                             *                                                                                               *
                             *                 LOW FLOW:   _ _ _ . 0     _ _72 . _      _ _ _ . 0      _ _ _ . 0      _ _72 . _ *
   AVERAGE FLOW:     220 CFS *                                                                                               *
                             * NO, OF DISCHARGERS                                                                            *
   LOW FLOW:       11 CFS    *           NEXT ADJACENT:             1              4              0              0             5 *
                             *               WITH FLOW:             1              4              0              0             5 *
                             *                                                                                               *
                             *             CUMULATIVE: _ _ _ _ _1/1   _ _ _ _ _4/4   _ _ _ _ _0     _ _ _ _ _0     _ _ _ _ _5/5 *
                             *                                                                                               *
                             *************************************************************************************************
   NUMBER OF INDUSTRIAL
   DISCHARGERS ******************************************************************************************************************
   *                  1     * 2       * 3       * 4       * 5       * 6       * 7       * 8       * 9       * 10      * 11      *
   * NEXT ADJACENT:       2 *       2 *       1 *       0 *       0 *       0 *       1 *       0 *       0 *       0 *       0 *
   *                        *         *         *         *         *         *         *         *         *         *         *
   *    CUMULATIVE: _ _ _ 2 * _ _ _ 2 * _ _ _ 1 * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ 1 * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ *
   *                        *         *         *         *         *         *         *         *         *         *         *
   *                 12     * 13      * 14      * 15      * 16      * 17      * 18      * 19      * 20      * 21      * 22      *
   * NEXT ADJACENT:       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *
   *                        *         *         *         *         *         *         *         *         *         *         *
   *    CUMULATIVE: _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ *
   *                        *         *         *         *         *         *         *
   *                 23     * 24      * 25      * 26      * 27      * 28      *  TOTAL  *
   * NEXT ADJACENT:       3 *       0 *       4 *       1 *       5 *       0 *      19 *
   *                        *         *         *         *         *         *         *
   **** CUMULATIVE: _ _ _ 3 * _ _ _ _ * _ _ _ 4 * _ _ _ 1 * _ _ _ 5 * _ _ _ _ * _ _ _19 *

   DOWNSTREAM
    UTILITY        U P S T R E A M    U T I L I T Y    I D E N T I F I C A T I O N    N U M B E R S

           00             00  00000000000000  00000000000000  00000000000000  00000000000000  00000000000000

                  00000000000000  00000000000000
```

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: 12/22/78                SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, 82377                         PAGE:   460

                                                                                                             RETAIL POPULATION
          UTILITY NAME               UTILITY ID NO.   RECORD CODE  STATE  COUNTY  CITY                        SERVED (X 1,000)
-------------------------------------------------------------------------------------------------------------------------------------
510   BOWLING GREEN,CITY OF          39096601500000     001100       OH     003   BOWLING GREEN                        26

ECORD KEY: 001101         ******************** E F F L U E N T   D I S C H A R G E ****************************************
                          *                                                                                                 *
OURCE:  MAUMEE RIVER      *                          PRIMARY        SECONDARY        TERTIARY        UNKNOWN          TOTAL *
                          * DISCHARGE FLOW,(CFS)                                                                            *
ERO WASTE CODE: 1         *          NEXT ADJACENT:        0              105              20              1            126 *
                          *                                                                                                 *
ATITUDE: 412837           *             CUMULATIVE: _ _ _ _ _0     _ _ _ _105     _ _ _ _ _20    _ _ _ _ _ 1      _ _ _ _126 *
                          *                                                                                                 *
ONGITUDE: 0834425         *   PERCENT WASTEWATER                                                                            *
                          *          AVERAGE FLOW:   _ _ _ . 0      _ _2 . 4      _ _ _ . 4      _ _ _ . 0      _ _2 . 8 *
                          *                                                                                                 *
                          *              LOW FLOW:   _ _ _ . 0      _142 . 0      _ _27 . 0      _ _1 . 3      _170 . 0 *
                          *                                                                                                 *
VERAGE FLOW:   4,457 CFS  *                                                                                                 *
                          * NO. OF DISCHARGERS                                                                              *
OW FLOW:      74 CFS      *         NEXT ADJACENT:        2               44                3             90            139 *
                          *             WITH FLOW:        2               44                3             15             64 *
                          *                                                                                                 *
                          *            CUMULATIVE: _ _ _ _ _2/2  _ _ _ _ _44/44 _ _ _ _ _3/3  _ _ _ _ _91/15 _ _ _ _140/64 *
                          *                                                                                                 *
                          ***************************************************************************************************

UMBER OF INDUSTRIAL
ISCHARGERS ********************************************************************************************************************
                  1       *  2       *  3       *  4       *  5       *  6       *  7       *  8       *  9       * 10       * 11       *
  NEXT ADJACENT:       16 *        2 *        8 *        4 *        5 *        1 *        9 *        0 *        1 *        0 *        0 *
                          *          *          *          *          *          *          *          *          *          *          *
     CUMULATIVE: _ _ _ 16 * _ _ _  2 * _ _ _  8 * _ _ _  5 * _ _ _  5 * _ _ _  1 * _ _ _  9 * _ _ _ _  * _ _ _  1 * _ _ _ _  * _ _ _ _  *
                          *          *          *          *          *          *          *          *          *          *          *
                 12       * 13       * 14       * 15       * 16       * 17       * 18       * 19       * 20       * 21       * 22       *
  NEXT ADJACENT:        2 *        0 *        1 *        2 *        0 *        0 *        1 *        5 *        3 *        0 *        0 *
                          *          *          *          *          *          *          *          *          *          *          *
     CUMULATIVE: _ _ _  2 * _ _ _ _  * _ _ _  1 * _ _ _  2 * _ _ _ _  * _ _ _ _  * _ _ _  1 * _ _ _  6 * _ _ _  3 * _ _ _ _  * _ _ _ _  *
                          *          *          *          *          *          *          *
                 23       * 24       * 25       * 26       * 27       * 28       *  TOTAL   *
  NEXT ADJACENT:        7 *        1 *       58 *        0 *      167 *       79 *      372 *
                          *          *          *          *          *          *          *
*** CUMULATIVE: _ _ _  7 * _ _ _  1 * _ _ _ 61 * _ _ _ _  * _ _ _168 * _ _ _ 81 * _ _ _380 *

OWNSTREAM
UTILITY        U P S T R E A M    U T I L I T Y    I D E N T I F I C A T I O N    N U M B E R S

         00    39270201500000  18291501710000  39448001500000  00000000000000  00000000000000  00000000000000

               00000000000000  00000000000000
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DATE: 12/22/78          SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, 82377                    PAGE:   561

                                                                                                        RETAIL POPULATION
PUB           UTILITY NAME                UTILITY ID NO,   RECORD CODE  STATE  COUNTY  CITY              SERVED (X 1,000)
-------------------------------------------------------------------------------------------------------------------------------
610   CINCINNATI, CITY OF                  39160301500000     001103       OH     003   CINCINNATI                850

   RECORD KEY: 001104           ******************** E F F L U E N T   D I S C H A R G E *******************************************
                                *                                                                                                  *
   SOURCE:  OHIO RIVER          *                         PRIMARY        SECONDARY        TERTIARY         UNKNOWN          TOTAL  *
                                * DISCHARGE FLOW,(CFS)                                                                             *
   ZERO WASTE CODE: 1           *          NEXT ADJACENT:       0                7               0              32             39  *
                                *                                                                                                  *
   LATITUDE: 390500             *              CUMULATIVE: - - - -147     - - - -912    - - - - -28      - - - -129      - - -1,216 *
                                *                                                                                                  *
   LONGITUDE: 0843400           *   PERCENT WASTEWATER                                                                             *
                                *           AVERAGE FLOW:  - - - . 2     - - - . 9       - - - . 0       - - - . 1       - - 1 . 3  *
                                *                                                                                                  *
                                *               LOW FLOW:  - - 2 . 2     - -13 . 5       - - - . 4       - - 1 . 9       - -18 . 0  *
   AVERAGE FLOW:  96,810 CFS    *                                                                                                  *
                                * NO. OF DISCHARGERS                                                                               *
   LOW FLOW:   6,733 CFS        *         NEXT ADJACENT:       0                3               0               1              4   *
                                *             WITH FLOW:       0                3               0               1              4   *
                                *                                                                                                  *
                                *           CUMULATIVE: - - - - -58/56 - - - - -272/257- - - - - -16/14 - - - - - -382/81 - - - - - -728/408*
                                *                                                                                                  *
                                ****************************************************************************************************

   NUMBER OF INDUSTRIAL
   DISCHARGERS ****************************************************************************************************************
   *             1   * 2         * 3         * 4         * 5         * 6         * 7         * 8         * 9         * 10        * 11        *
   * NEXT ADJACENT:     4 *       0 *         0 *         0 *         1 *         0 *         0 *         0 *         0 *         0 *         0 *
   *                 *           *           *           *           *           *           *           *           *           *           *
   *    CUMULATIVE: - - -76 * - 2,189 * - - -11 * - - - -6 * - - - -2 * - - - -1 * - - -18 * - - - - * - - - -4 * - - - -7 * - - - -1 *
   *                 *           *           *           *           *           *           *           *           *           *           *
   *            12   * 13        * 14        * 15        * 16        * 17        * 18        * 19        * 20        * 21        * 22        *
   * NEXT ADJACENT:     0 *       0 *         0 *         0 *         0 *         0 *         0 *         1 *         0 *         0 *         0 *
   *                 *           *           *           *           *           *           *           *           *           *           *
   *    CUMULATIVE: - - -18 * - - - -3 * - - -12 * - - -21 * - - -21 * - - - - * - - -10 * - - -19 * - - 117 * - - -15 * - - - -1 *
   *                 *           *           *           *           *           *           *
   *            23   * 24        * 25        * 26        * 27        * 28        *   TOTAL   *
   * NEXT ADJACENT:     1 *       0 *         1 *         0 *        10 *         3 *        21 *
   *                 *           *           *           *           *           *           *
   **** CUMULATIVE: - - -94 * - - -66 * - - 188 * - - - -5 * - - 854 * - 1,014 * - 4,753 *

   DOWNSTREAM
    UTILITY       U P S T R E A M   U T I L I T Y   I D E N T I F I C A T I O N   N U M B E R S

   21289001510000   21289001520000  00000000000000  00000000000000  00000000000000  00000000000000  00000000000000

                    00000000000000  00000000000000
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DATE  01/05/79          SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, S2377
                                                                                                      PAGE     10

PUB          UTILITY NAME                 UTILITY ID NO   RECORD CODE  STATE  COUNTY  CITY             RETAIL POPULATION
                                                                                                       SERVED (X 1,000)
---------------------------------------------------------------------------------------------------------------------
470   COLA WATER PLT                     45231600000000     001448       SC    019    COLUMBIA                 228

  RECORD KEY  001450          ******************** E F F L U E N T   D I S C H A R G E ****************************
                              *
  SOURCE   SALUDA RIVER       *                               PRIMARY     SECONDARY     TERTIARY     UNKNOWN      TOTAL
                              * DISCHARGE FLOW, (CFS)
  ZERO WASTE CODE  1          *            NEXT ADJACENT:           0           288           16           2        306
                              *
  LATITUDE: 340010            *               CUMULATIVE: _ _ _ _ _ 0   _ _ _ _ 439   _ _ _ _ _16   _ _ _ _ _ 2   _ _ _ _456
                              *
  LONGITUDE: 0810332          *    PERCENT WASTEWATER
                              *            AVERAGE FLOW     _ _ _   0   _ _15   1     _ _ _     5   _ _ _     1   _ _15   7
                              *
                              *                LOW FLOW:    _ _ _   0   _ 337 . 7     _ _12   3     _ _ 1   5     _ 350   8
  AVERAGE FLOW    2,913 CFS   *
                              * NO  OF DISCHARGERS
  LOW FLOW      130 CFS       *          NEXT ADJACENT              1            10            1           7         19
                              *              WITH FLOW:             1            10            1           3         15
                              *
                              *           CUMULATIVE:  _ _ _ _ _ 2/2   _ _ _ _ _34/23   _ _ _ _ 1/1   _ _ _ _15/6   _ _ _ _52/42
                              *
                              *************************************************************************************************
  NUMBER OF INDUSTRIAL
  DISCHARGERS ******************************************************************************************************************
  *               1      * 2       * 3       * 4       * 5       * 6       * 7       * 8       * 9       * 10      * 11
  * NEXT ADJACENT:     0 *       0 *       2 *       0 *       0 *       0 *       0 *       0 *       8 *       2 *        0
  *                      *         *         *         *         *         *         *         *         *         *
  *    CUMULATIVE: _ _ _ 2 * _ _ _ _ * _ _ _ 3 * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _29 * _ _ _ 2 * _ _ _ _
  *                      *         *         *         *         *         *         *         *         *         *
  *              12      * 13      * 14      * 15      * 16      * 17      * 18      * 19      * 20      * 21      * 22
  * NEXT ADJACENT      0 *       0 *       0 *       1 *       0 *       0 *       0 *       0 *       0 *       0 *        0
  *                      *         *         *         *         *         *         *         *         *         *
  *    CUMULATIVE: _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ 1 * _ _ _ 3 * _ _ _ _ * _ _ _ _ * _ _ _ 1 * _ _ _ _ * _ _ _ _ * _ _ _ _
  *                      *         *         *         *         *         *         *
  *              23      * 24      * 25      * 26      * 27      * 28      *  TOTAL  *
  * NEXT ADJACENT:     2 *       0 *       1 *       0 *      20 *       7 *      43 *
  *                      *         *         *         *         *         *         *
  **** CUMULATIVE  _ _ _ 5 * _ _ _ 1 * _ _ _ 7 * _ _ _ _ * _ _ _58 * _ _ _41 * _ _ 153 *

  DOWNSTREAM
   UTILITY        U P S T R E A M    U T I L I T Y    I D E N T I F I C A T I O N    N U M B E R S

             00   45132200000000  00000000000000  00000000000000  00000000000000  00000000000000  00000000000000

                  00000000000000  00000000000000
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                                SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, 82377
DATE: 12/22/78                                                                                                   PAGE:   370

                                                                                                        RETAIL POPULATION
PUB            UTILITY NAME               UTILITY ID NO,   RECORD CODE  STATE  COUNTY  CITY              SERVED (X 1,000)
------------------------------------------------------------------------------------------------------------------------------
430   COLUMBUS WATER WORKS                13199101500000     000365       GA    021    COLUMBUS                     134

   RECORD KEY: 000366          ******************** E F F L U E N T   D I S C H A R G E ******************************************
                               *                                                                                                 *
   SOURCE:  LAKE OLIVER DN     *                             PRIMARY        SECONDARY        TERTIARY         UNKNOWN         TOTAL *
                               * DISCHARGE FLOW,(CFS)                                                                            *
   ZERO WASTE CODE: 2          *           NEXT ADJACENT:          0               0               0               0             0 *
                               *                                                                                                 *
   LATITUDE: 323000            *               CUMULATIVE: _ _ _ _ _0      _ _ _ _214      _ _ _ _ _0      _ _ _ _ _0      _ _ _ _214 *
                               *                                                                                                 *
   LONGITUDE: 0850000          *   PERCENT WASTEWATER                                                                            *
                               *          AVERAGE FLOW:  _ _ _ . 0      _ _ 3 . 2       _ _ _ . 0       _ _ _ . 0       _ _ 3 . 2 *
                               *                                                                                                 *
                               *               LOW FLOW:  _ _ _ . 0      _ _20 . 4       _ _ _ . 0       _ _ _ . 0       _ _20 . 4 *
   AVERAGE FLOW:   6,715 CFS   *                                                                                                 *
                               * NO, OF DISCHARGERS                                                                              *
   LOW FLOW:   1,050 CFS       *          NEXT ADJACENT:        0               0               0               0             0 *
                               *              WITH FLOW:        0               0               0               0             0 *
                               *                                                                                                 *
                               *             CUMULATIVE: _ _ _ _ _1/1    _ _ _ _ _19/18   _ _ _ _ _0      _ _ _ _ _1/1     _ _ _ _21/20 *
                               *                                                                                                 *
                               ***************************************************************************************************
   NUMBER OF INDUSTRIAL
   DISCHARGERS ****************************************************************************************************************
   *                1       * 2        * 3        * 4        * 5        * 6        * 7        * 8        * 9        * 10       * 11       *
   * NEXT ADJACENT:     0 *        0 *        0 *        0 *        0 *        0 *        0 *        0 *        0 *        0 *        0 *
   *                      *          *          *          *          *          *          *          *          *          *          *
   *    CUMULATIVE: _ _ _ _ * _ _ _ _ * _ _ _2 * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _7 * _ _ _ _ * _ _ _ _  *
   *                      *          *          *          *          *          *          *          *          *          *          *
   *               12     * 13       * 14       * 15       * 16       * 17       * 18       * 19       * 20       * 21       * 22       *
   * NEXT ADJACENT:     0 *        0 *        0 *        0 *        0 *        0 *        0 *        0 *        0 *        0 *        0 *
   *                      *          *          *          *          *          *          *          *          *          *          *
   *    CUMULATIVE: _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _1 *
   *                      *          *          *          *          *          *          *
   *               23     * 24       * 25       * 26       * 27       * 28       *   TOTAL  *
   * NEXT ADJACENT:     0 *        0 *        0 *        0 *        0 *        0 *        0 *
   *                      *          *          *          *          *          *          *
   **** CUMULATIVE: _ _ _1 * _ _ _ _ * _ _ _3 * _ _ _ _ * _ _ _22 * _ _ _6 * _ _ _42 *

   DOWNSTREAM
    UTILITY        U P S T R E A M    U T I L I T Y    I D E N T I F I C A T I O N    N U M B E R S

              00   01643001500000  00000000000000  00000000000000  00000000000000  00000000000000  00000000000000

                   00000000000000  00000000000000
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                              SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, 82377
DATE: 12/22/78                                                                                                        PAGE:   676

                                                                                                            RETAIL POPULATION
PUB             UTILITY NAME                 UTILITY ID NO,   RECORD CODE  STATE  COUNTY  CITY             SERVED (X 1,000)
-----------------------------------------------------------------------------------------------------------------------------
640   CITY OF DALLAS                         48227001500000     001536       TX    027    DALLAS                  878

   RECORD KEY: 001539           ****************** E F F L U E N T   D I S C H A R G E ********************************
                                *                                                                                    *
   SOURCE: LAKE RAY HUBBARD     *                         PRIMARY       SECONDARY       TERTIARY      UNKNOWN      TOTAL *
                                * DISCHARGE FLOW,(CFS)                                                                  *
   ZERO WASTE CODE: 1           *          NEXT ADJACENT:       0               7             28            0         35 *
                                *                                                                                    *
   LATITUDE: 324400             *             CUMULATIVE: _ _ _ _ _0     _ _ _ _ _ _7   _ _ _ _ _28   _ _ _ _ _0   _ _ _ _ _35 *
                                *                                                                                    *
   LONGITUDE: 0962300           *   PERCENT WASTEWATER                                                               *
                                *           AVERAGE FLOW:   _ _ _ . 0      _ _ _ . 6     _ _2 . 2     _ _ _ . 0    _ _2 . 8 *
                                *                                                                                    *
                                *               LOW FLOW:   _ _ _ . 0      _ _43 . 8     _175 . 0     _ _ _ . 0    _218 . 8 *
   AVERAGE FLOW:   1,257 CFS    *                                                                                    *
                                * NO, OF DISCHARGERS                                                                  *
   LOW FLOW:      16 CFS        *         NEXT ADJACENT:       0               3              1             0          4 *
                                *             WITH FLOW:       0               3              1             0          4 *
                                *                                                                                    *
                                *            CUMULATIVE: _ _ _ _ _0     _ _ _ _ _9/9   _ _ _ _ _1/1   _ _ _ _ _2/0  _ _ _ _ _12/6 *
                                *                                                                                    *
                                **************************************************************************************

   NUMBER OF INDUSTRIAL
   DISCHARGERS ***************************************************************************************************
   *            1     * 2       * 3       * 4       * 5       * 6       * 7       * 8       * 9       * 10      * 11      *
   * NEXT ADJACENT:   0 *     0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *
   *                  *         *         *         *         *         *         *         *         *         *         *
   *    CUMULATIVE: _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ *
   *                  *         *         *         *         *         *         *         *         *         *         *
   *            12    * 13      * 14      * 15      * 16      * 17      * 18      * 19      * 20      * 21      * 22      *
   * NEXT ADJACENT:   0 *     0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *
   *                  *         *         *         *         *         *         *         *         *         *         *
   *    CUMULATIVE: _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ *
   *                  *         *         *         *         *         *         *
   *            23    * 24      * 25      * 26      * 27      * 28      *  TOTAL  *
   * NEXT ADJACENT:   0 *     0 *       0 *       0 *       4 *       0 *       4 *
   *                  *         *         *         *         *         *         *
   **** CUMULATIVE: _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _12 * _ _ _ _ * _ _ _12 *

   DOWNSTREAM
     UTILITY       U P S T R E A M    U T I L I T Y   I D E N T I F I C A T I O N   N U M B E R S

            00    48341001500000  00000000000000  00000000000000  00000000000000  00000000000000  00000000000000

                  00000000000000  00000000000000
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                         SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, 82377
DATE: 12/22/78                                                                                                PAGE:   148

                                                                                                       RETAIL POPULATION
PUB          UTILITY NAME              UTILITY ID NO,   RECORD CODE  STATE  COUNTY  CITY                 SERVED (X 1,000)
--------------------------------------------------------------------------------------------------------------------------
240   COMMUNWEALTH WATER COMPANY         34180101530000     000838      NJ    003    MILLBURN                       234

   RECORD KEY: 000839        ******************** E F F L U E N T   D I S C H A R G E ********************************
                             *                                                                                          *
   SOURCE:  PASSAIC RIVER C  *                              PRIMARY       SECONDARY        TERTIARY       UNKNOWN       TOTAL *
                             * DISCHARGE FLOW,(CFS)                                                                       *
   ZERU WASTE CODE: 1        *            NEXT ADJACENT:          0               6               0             2           8 *
                             *                                                                                          *
   LATITUDE: 404439          *               CUMULATIVE: - - - - -0     - - - - -6     - - - - -0     - - - - -2    - - - - -8 *
                             *                                                                                          *
   LONGITUDE: 0742116        *   PERCENT WASTEWATER                                                                     *
                             *            AVERAGE FLOW:  - - - .0     - - 3 . 6     - - - . 0     - - 1 . 2     - - 4 . 8 *
                             *                                                                                          *
                             *                LOW FLOW:  - - - .0     - 200 . 0     - - - . 0     - - 66 . 0    - 266 . 7 *
   AVERAGE FLOW:    168 CFS  *                                                                                          *
                             * NO, OF DISCHARGERS                                                                         *
   LUW FLOW:        3 CFS    *          NEXT ADJACENT:        0               6               0             3           9 *
                             *              WITH FLOW:        0               6               0             1           7 *
                             *                                                                                          *
                             *            CUMULATIVE: - - - - -0     - - - - -6/6   - - - - -0     - - - - -3/1  - - - - -9/7 *
                             *                                                                                          *
                             ********************************************************************************************
   NUMBER OF INDUSTRIAL
   DISCHARGERS *****************************************************************************************************
   *                 1      * 2      * 3      * 4      * 5      * 6      * 7      * 8      * 9      * 10     * 11     *
   * NEXT ADJACENT:      0  *     0  *     0  *     0  *     0  *     0  *     0  *     0  *     0  *     0  *     0  *
   *                        *        *        *        *        *        *        *        *        *        *        *
   *    CUMULATIVE: - - - - * - - - -* - - - -* - - - -* - - - -* - - - -* - - - -* - - - -* - - - -* - - - -* - - - - *
   *                        *        *        *        *        *        *        *        *        *        *        *
   *                12      * 13     * 14     * 15     * 16     * 17     * 18     * 19     * 20     * 21     * 22     *
   * NEXT ADJACENT:      0  *     0  *     2  *     0  *     0  *     0  *     0  *     2  *     0  *     1  *     0  *
   *                        *        *        *        *        *        *        *        *        *        *        *
   *    CUMULATIVE: - - - - * - - - -* - - -2 * - - - -* - - - -* - - - -* - - - -* - - -2 * - - - -* - - -1 * - - - - *
   *                        *        *        *        *        *        *        *
   *                23      * 24     * 25     * 26     * 27     * 28     *  TOTAL *
   * NEXT ADJACENT:      0  *     0  *     0  *     0  *    10  *     4  *    19  *
   *                        *        *        *        *        *        *        *
   **** CUMULATIVE: - - - - * - - - -* - - - -* - - - -* - - 10 * - - -4 * - - 19 *

   DOWNSTREAM
    UTILITY         U P S T R E A M    U T I L I T Y    I D E N T I F I C A T I O N    N U M B E R S

   34640701500000              00  00000000000000  00000000000000  00000000000000  00000000000000  00000000000000

                   00000000000000  00000000000000
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                         SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, S2377
DATE: 12/22/78                                                                                        PAGE:  476

                                                                                                  RETAIL POPULATION
PUB          UTILITY NAME              UTILITY ID NO.   RECORD CODE  STATE  COUNTY  CITY           SERVED (X 1,000)
------------------------------------------------------------------------------------------------------------------
 610  EAST ST LOUIS & INTER WATER CO    17233401500000     000430       IL     001    E ST LOUIS                215

  RECORD KEY: 000431        ******************* E F F L U E N T   D I S C H A R G E *****************************
                            *                                                                                    *
  SOURCE:  MISSISSIPPI RIV  *                        PRIMARY      SECONDARY      TERTIARY      UNKNOWN      TOTAL *
                            * DISCHARGE FLOW,(CFS)                                                               *
  ZERO WASTE CODE: 2        *           NEXT ADJACENT:      0              0             0            0          0 *
                            *                                                                                    *
  LATITUDE: 384635          *             CUMULATIVE: - - - - 273   - - - -3394   - - - - -55   - - - - 222   - - - -3944 *
                            *                                                                                    *
  LONGITUDE: 0900904        *   PERCENT WASTEWATER                                                               *
                            *           AVERAGE FLOW:  - - - . 2   - - 1 . 9     - - - . 0     - - - . 1     - - 2 . 2 *
                            *                                                                                    *
                            *               LOW FLOW:  - - - . 7   - - 8 . 8     - - - . 1     - - - . 5     - -10 . 2 *
  AVERAGE FLOW: 176,800 CFS *                                                                                    *
                            * NO. OF DISCHARGERS                                                                 *
  LOW FLOW:  38,710 CFS     *         NEXT ADJACENT:      0              0             0            0          0 *
                            *             WITH FLOW:      0              0             0            0          0 *
                            *                                                                                    *
                            *             CUMULATIVE: - - - - 129/127- - - -1296/1263 - - - -37/34 - - - -1721/102- - - -3183/1526
                            *                                                                                    *
                            **************************************************************************************
  NUMBER OF INDUSTRIAL
  DISCHARGERS ******************************************************************************************************
  *                   1  * 2        * 3        * 4        * 5        * 6        * 7        * 8        * 9        * 10       * 11       *
  * NEXT ADJACENT:    0  *        0 *        0 *        0 *        0 *        0 *        0 *        0 *        0 *        0 *        0 *
  *                      *          *          *          *          *          *          *          *          *          *          *
  *    CUMULATIVE: - - 457 * - - 149 * - - -83 * - - 177 * - - -28 * - - -27 * - - -77 * - - - 2 * - - -45 * - - -14 * - - - 9 *
  *                      *          *          *          *          *          *          *          *          *          *          *
  *                  12  * 13       * 14       * 15       * 16       * 17       * 18       * 19       * 20       * 21       * 22       *
  * NEXT ADJACENT:    0  *        0 *        0 *        0 *        0 *        0 *        0 *        0 *        0 *        0 *        0 *
  *                      *          *          *          *          *          *          *          *          *          *          *
  *    CUMULATIVE: - - -63 * - - -23 * - - -61 * - - -35 * - - -27 * - - - 6 * - - - 2 * - - -61 * - - -39 * - - - 6 * - - - 1 *
  *                      *          *          *          *          *          *          *
  *                  23  * 24       * 25       * 26       * 27       * 28       *  TOTAL   *
  * NEXT ADJACENT:    0  *        0 *        0 *        0 *        0 *        0 *        0 *
  *                      *          *          *          *          *          *          *
  **** CUMULATIVE: - - 181 * - - -18 * - - 209 * - - - 6 * - -3510 * - -2874 * - -8345 *

  DOWNSTREAM
   UTILITY         U P S T R E A M    U T I L I T Y    I D E N T I F I C A T I O N    N U M B E R S

  22459001500000   29714001560000  00000000000000  00000000000000  00000000000000  00000000000000  00000000000000

                   00000000000000  00000000000000
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                          SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, 82377
ATE: 12/22/78                                                                                              PAGE:   279

JB          UTILITY NAME                UTILITY ID NO,   RECORD CODE  STATE  COUNTY  CITY               RETAIL POPULATION
                                                                                                        SERVED (X 1,000)
-------------------------------------------------------------------------------------------------------------------------
320  ELIZABETHTOWN WATER COMPANY          34237101510000      000844      NJ    003    ELIZABETH                  500

 RECORD KEY: 000845          ******************* E F F L U E N T   D I S C H A R G E *************************************
                             *                                                                                           *
 SOURCE:  RARITAN & MILLS    *                           PRIMARY       SECONDARY        TERTIARY        UNKNOWN       TOTAL *
                             * DISCHARGE FLOW,(CFS)                                                                      *
 ZERO WASTE CODE: 1          *           NEXT ADJACENT:        0              0                0               8           8 *
                             *                                                                                           *
 LATITUDE: 403235            *              CUMULATIVE: _ _ _ _ _0     _ _ _ _ _ _0     _ _ _ _ _ _0     _ _ _ _ _ _8     _ _ _ _ _ _8 *
                             *                                                                                           *
 LONGITUDE: 0743420          *   PERCENT WASTEWATER                                                                      *
                             *          AVERAGE FLOW:  _ _ _ . 0     _ _ _ . 0     _ _ _ . 0     _ _1 . 1     _ _1 . 1 *
                             *                                                                                           *
                             *              LOW FLOW:  _ _ _ . 0     _ _ _ . 0     _ _ _ . 0     _ 17 . 0     _ 17 . 0 *
 AVERAGE FLOW:      722 CFS  *                                                                                           *
                             * NO. OF DISCHARGERS                                                                        *
 LOW FLOW:       48 CFS      *          NEXT ADJACENT:      0               1                0               2           3 *
                             *             WITH FLOW:       0               1                0               1           1 *
                             *                                                                                           *
                             *            CUMULATIVE: _ _ _ _ _0     _ _ _ _ _ _1/1  _ _ _ _ _ _0     _ _ _ _ _ _2/1  _ _ _ _ _ _3/2 *
                             *                                                                                           *
                             *********************************************************************************************
 NUMBER OF INDUSTRIAL
 DISCHARGERS ***********************************************************************************************************
 *           1      * 2       * 3       * 4       * 5       * 6       * 7       * 8       * 9       * 10      * 11      *
 * NEXT ADJACENT:  0 *      0 *      1 *      0 *      0 *      0 *      0 *      0 *      0 *      0 *      0   *
 *                   *        *        *        *        *        *        *        *        *        *          *
 *    CUMULATIVE: _ _ _ _ * _ _ _ _ * _ _ _1 * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _   *
 *                   *        *        *        *        *        *        *        *        *        *          *
 *           12      * 13      * 14      * 15      * 16      * 17      * 18      * 19      * 20      * 21      * 22      *
 * NEXT ADJACENT:  0 *      0 *      0 *      0 *      0 *      0 *      0 *      2 *      0 *      0 *      0   *
 *                   *        *        *        *        *        *        *        *        *        *          *
 *    CUMULATIVE: _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _2 * _ _ _ _ * _ _ _ _ * _ _ _ _   *
 *                   *        *        *        *        *        *        *        *
 *           23      * 24      * 25      * 26      * 27      * 28      *  TOTAL  *
 * NEXT ADJACENT:  2 *      0 *      0 *      0 *      4 *      6 *     15 *
 *                   *        *        *        *        *        *        *
 **** CUMULATIVE: _ _ _2 * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _4 * _ _ _6 * _ _ _15 *

 DOWNSTREAM
  UTILITY       U P S T R E A M    U T I L I T Y    I D E N T I F I C A T I O N    N U M B E R S

          00              00  00000000000000  00000000000000  00000000000000  00000000000000  00000000000000

          00000000000000  00000000000000
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                         SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, 82377
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                                                                                                 RETAIL POPULATION
PUB          UTILITY NAME              UTILITY ID NO.   RECORD CODE  STATE  COUNTY  CITY          SERVED (X 1,000)
-------------------------------------------------------------------------------------------------------------------
320   ELIZABETHTOWN WATER COMPANY      34237101510000    000844       NJ     003    ELIZABETH             500

   RECORD KEY: 000846         ******************** E F F L U E N T   D I S C H A R G E ************************
                              *                                                                               *
   SOURCE:  DELAWARE-RARITA   *                        PRIMARY     SECONDARY     TERTIARY     UNKNOWN     TOTAL *
                              * DISCHARGE FLOW,(CFS)                                                          *
   ZERO WASTE CODE: 2         *          NEXT ADJACENT:     0             0            0            0         0 *
                              *                                                                               *
   LATITUDE: 000000           *             CUMULATIVE: _ _ _ _ _0  _ _ _ _ _1  _ _ _ _ _3  _ _ _ _ _0  _ _ _ _ _4 *
                              *                                                                               *
   LONGITUDE: 0000000         *   PERCENT WASTEWATER                                                          *
                              *          AVERAGE FLOW:  _ _ _ ._0   _ _1 ._1    _ _3 ._2    _ _ _ ._0   _ _4 ._3 *
                              *                                                                               *
                              *              LOW FLOW:  _ _ _ ._0   _ _2 ._0    _ _6 ._1    _ _ _ ._0   _ _8 ._2 *
   AVERAGE FLOW:      93 CFS  *                                                                               *
                              * NO. OF DISCHARGERS                                                            *
   LOW FLOW:      49 CFS      *         NEXT ADJACENT:     0             0            0            0         0 *
                              *             WITH FLOW:     0             0            0            0         0 *
                              *                                                                               *
                              *           CUMULATIVE: _ _ _ _ _0  _ _ _ _ _1/1  _ _ _ _ _2/2  _ _ _ _ _2/0  _ _ _ _ _5/3 *
                              *                                                                               *
                              *********************************************************************************

   NUMBER OF INDUSTRIAL
   DISCHARGERS ********************************************************************************************
   *              1    *  2     *  3     *  4     *  5     *  6     *  7     *  8     *  9     * 10     * 11     *
   * NEXT ADJACENT:   0 *     0 *     0 *     0 *     0 *     0 *     0 *     0 *     0 *     0 *     0 *
   *                    *       *       *       *       *       *       *       *       *       *       *
   *    CUMULATIVE: _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ *
   *                    *       *       *       *       *       *       *       *       *       *       *
   *             12     * 13    * 14    * 15    * 16    * 17    * 18    * 19    * 20    * 21    * 22    *
   * NEXT ADJACENT:   0 *     0 *     0 *     0 *     0 *     0 *     0 *     0 *     0 *     0 *     0 *
   *                    *       *       *       *       *       *       *       *       *       *       *
   *    CUMULATIVE: _ _ _ _ * _ _ _ _ * _ _ _2 * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ *
   *                    *       *       *       *       *       *       *
   *             23     * 24    * 25    * 26    * 27    * 28    * TOTAL *
   * NEXT ADJACENT:   0 *     0 *     0 *     0 *     0 *     0 *     0 *
   *                    *       *     3 *       *     7 *     5 *    17 *
   **** CUMULATIVE: _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ *

   DOWNSTREAM
    UTILITY          U P S T R E A M    U T I L I T Y    I D E N T I F I C A T I O N    N U M B E R S

   34510101510000    34693001520000  00000000000000  00000000000000  00000000000000  00000000000000  00000000000000

                     00000000000000  00000000000000
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                            SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, S2377
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PUB          UTILITY NAME                UTILITY ID NO.   RECORD CODE  STATE  COUNTY  CITY                   RETAIL POPULATION
                                                                                                             SERVED (X 1,000)
--------------------------------------------------------------------------------------------------------------------------------
320   ELIZABETHTOWN WAT CO PRINCETON     34693001520000     000875      NJ     003    PRINCETON                    25

  RECORD KEY: 000876          ******************** E F F L U E N T   D I S C H A R G E *******************************************
                              *
  SOURCE:  DELAWARE RARATI    *                               PRIMARY      SECONDARY       TERTIARY        UNKNOWN          TOTAL  *
                              * DISCHARGE FLOW,(CFS)                                                                               *
  ZERO WASTE CODE: 1          *              NEXT ADJACENT:         0              1              3              0              4  *
                              *                                                                                                    *
  LATITUDE: 000000            *                 CUMULATIVE: _ _ _ _ _0    _ _ _ _ _ _1   _ _ _ _ _ _3   _ _ _ _ _ _0   _ _ _ _ _ _4  *
                              *                                                                                                    *
  LONGITUDE: 0000000          *   PERCENT WASTEWATER                                                                               *
                              *              AVERAGE FLOW:  _ _ _ . 0     _ _ 1 . 1      _ _ 3 . 2      _ _ _ . 0      _ _ 4 . 3   *
                              *                                                                                                    *
                              *                  LOW FLOW:  _ _ _ . 0     _ _ 2 . 0      _ _ 6 . 1      _ _ _ . 0      _ _ 8 . 2   *
  AVERAGE FLOW:      93 CFS   *                                                                                                    *
                              * NO. OF DISCHARGERS                                                                                 *
  LOW FLOW:      49 CFS       *            NEXT ADJACENT:          0              1              2              2              5  *
                              *                WITH FLOW:          0              1              2              0              3  *
                              *                                                                                                    *
                              *               CUMULATIVE: _ _ _ _ _0   _ _ _ _ _ _1/1  _ _ _ _ _ _2/2  _ _ _ _ _ _2/0  _ _ _ _ _ _5/3 *
                              *                                                                                                    *
                              ******************************************************************************************************
  NUMBER OF INDUSTRIAL
  DISCHARGERS ************************************************************************************************************************
  *                  1    *  2        *  3        *  4        *  5        *  5        *  7        *  8        *  9        *  10       *  11       *
  * NEXT ADJACENT:      0 *         0 *         0 *         0 *         0 *         0 *         0 *         0 *         0 *         0 *         0 *
  *                       *           *           *           *           *           *           *           *           *           *           *
  *    CUMULATIVE: _ _ _ _* _ _ _ _   * _ _ _ _   * _ _ _ _   * _ _ _ _   * _ _ _ _   * _ _ _ _   * _ _ _ _   * _ _ _ _   * _ _ _ _   * _ _ _ _   *
  *                       *           *           *           *           *           *           *           *           *           *           *
  *                 12    *  13       *  14       *  15       *  16       *  17       *  18       *  19       *  20       *  21       *  22       *
  * NEXT ADJACENT:      0 *         0 *         2 *         0 *         0 *         0 *         0 *         0 *         0 *         0 *         0 *
  *                       *           *           *           *           *           *           *           *           *           *           *
  *    CUMULATIVE: _ _ _ _* _ _ _ _   * _ _ _ 2   * _ _ _ _   * _ _ _ _   * _ _ _ _   * _ _ _ _   * _ _ _ _   * _ _ _ _   * _ _ _ _   * _ _ _ _   *
  *                       *           *           *           *           *           *         4 *
  *                 23    *  24       *  25       *  26       *  27       *  28       *   TOTAL   *
  * NEXT ADJACENT:      0 *         0 *         3 *         0 *         7 *         5 *        17 *
  *                       *           *           *           *           *           *           *
  **** CUMULATIVE: _ _ _ _* _ _ _ _   * _ _ _ 3   * _ _ _ _   * _ _ _ 7   * _ _ _ 5   * _ _ _17   *

  DOWNSTREAM
    UTILITY        U P S T R E A M    U T I L I T Y   I D E N T I F I C A T I O N   N U M B E R S

  34237101510000              00  00000000000000  00000000000000  00000000000000  00000000000000  00000000000000

                   00000000000000  00000000000000
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                              SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, 82377
DATE: 12/22/78                                                                                                        PAGE:   518

                                                                                                             RETAIL POPULATION
PUB           UTILITY NAME                UTILITY ID NO.   RECORD CODE  STATE  COUNTY  CITY                  SERVED (X 1,000)
-----------------------------------------------------------------------------------------------------------------------------
610   ENGLEWOOD - CITY OF                 08288001500000     000206       CO     001    ENGLEWOOD                  36

   RECORD KEY: 000207        ********************** E F F L U E N T   D I S C H A R G E ***************************
                             *
   SOURCE:  SOUTH PLATTE RI  *                                PRIMARY       SECONDARY       TERTIARY       UNKNOWN          TOTAL  *
                             * DISCHARGE FLOW,(CFS)                                                                                *
   ZERO WASTE CODE: 1        *              NEXT ADJACENT:          0               6              0             0              6  *
                             *                                                                                                     *
   LATITUDE: 393830          *                 CUMULATIVE: - - - - -0     - - - - - 6    - - - - - 0   - - - - - 0    - - - - - 6  *
                             *                                                                                                     *
   LONGITUDE: 1050050        *   PERCENT WASTEWATER                                                                                *
                             *                AVERAGE FLOW:  - - - . 0     - - 2 . 6      - - - . 0     - - - . 0      - - 2 . 6  *
                             *                                                                                                     *
                             *                    LOW FLOW:  - - - . 0     - -50 . 0      - - - . 0     - - - . 0      - -50 . 0  *
   AVERAGE FLOW:     234 CFS *                                                                                                     *
                             * NO. OF DISCHARGERS                                                                                  *
   LOW FLOW:      12 CFS     *              NEXT ADJACENT:        0               5               0             1              6   *
                             *                  WITH FLOW:        0               5               0             0              5   *
                             *                                                                                                     *
                             *                 CUMULATIVE: - - - - -0    - - - - - 5/5   - - - - - 2/2  - - - - - 1/0  - - - - - 9/7 *
                             *                                                                                                     *
                             *******************************************************************************************************

   NUMBER OF INDUSTRIAL
   DISCHARGERS *****************************************************************************************************************
   *                1     * 2        * 3        * 4        * 5        * 6        * 7        * 8        * 9        * 10       * 11       *
   * NEXT ADJACENT:     2 *        0 *        0 *        0 *        0 *        0 *        0 *        0 *        0 *        0 *        0 *
   *                      *          *          *          *          *          *          *          *          *          *          *
   *    CUMULATIVE: - - -5* - - - -  * - - - -  * - - - -  * - - - -  * - - - -  * - - - -  * - - - -  * - - - -  * - - - -  * - - - -  *
   *                      *          *          *          *          *          *          *          *          *          *          *
   *               12     * 13       * 14       * 15       * 16       * 17       * 18       * 19       * 20       * 21       * 22       *
   * NEXT ADJACENT:     0 *        0 *        0 *        2 *        0 *        0 *        0 *        0 *        0 *        0 *        0 *
   *                      *          *          *          *          *          *          *          *          *          *          *
   *    CUMULATIVE: - - - * - - - -  * - - - -  * - - - 2  * - - - -  * - - - -  * - - - -  * - - - -  * - - - -  * - - - -  * - - - -  *
   *                      *          *          *          *          *          *          *
   *               23     * 24       * 25       * 26       * 27       * 28       * TOTAL    *
   * NEXT ADJACENT:     0 *        0 *        0 *        0 *        7 *        8 *      19  *
   *                      *          *          *          *          *          *          *
   **** CUMULATIVE: - - - * - - - -  * - - - -  * - - - -  * - - - 9  * - - -15  * - - -31  *

   DOWNSTREAM
     UTILITY        U P S T R E A M    U T I L I T Y    I D E N T I F I C A T I O N    N U M B E R S

   29713401500000   08048701500000  00000000000000  00000000000000  00000000000000  00000000000000  00000000000000

                    00000000000000  00000000000000
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                        SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRN SYSTEM, 52377
DATE: 12/22/78                                                                                        PAGE:  675

                                                                                                   RETAIL POPULATION
PUB           UTILITY NAME           UTILITY ID NO,   RECORD CODE  STATE  COUNTY  CITY             SERVED (X 1,000)
--------------------------------------------------------------------------------------------------------------------
640   FORT WORTH WATER DEPARTMENT     48322001620000     001544       TX     027    FORT WORTH              490

   RECORD KEY: 001546        ******************** E F F L U E N T   D I S C H A R G E *****************************
                             *                                                                                    *
   SOURCE: BEN BROOK LAKE    *                           PRIMARY      SECONDARY      TERTIARY     UNKNOWN    TOTAL *
                             * DISCHARGE FLOW,(CFS)                                                               *
   ZERO WASTE CODE: 1        *          NEXT ADJACENT:         0              1             0           0        1 *
                             *                                 0              1             0           0        1 *
   LATITUDE: 323900          *              CUMULATIVE: ------      ------         ------       ------     ------ *
                             *                                                                                    *
   LONGITUDE: 0972700        *   PERCENT WASTEWATER            0            1  6            0           0     1  6 *
                             *           AVERAGE FLOW:  ---.-        ---.-          ---.-        ---.-      ---.- *
                             *                                 0                            0           0        *
                             *               LOW FLOW:  ---.-        ---.-          ---.-        ---.-      ---.- *
   AVERAGE FLOW:      61 CFS *                                                                                    *
                             * NO, OF DISCHARGERS                                                                 *
   LOW FLOW:          CFS    *         NEXT ADJACENT:          0              1             0           0        1 *
                             *             WITH FLOW:          0              1             0           0        1 *
                             *                                 0            1/1             0           0      1/1 *
                             *             CUMULATIVE: ------       ------         ------       ------     ------ *
                             *                                                                                    *
                             **************************************************************************************
   NUMBER OF INDUSTRIAL
   DISCHARGERS ***************************************************************************************************
   *             1     * 2      * 3      * 4      * 5      * 6      * 7      * 8      * 9      * 10     * 11      *
   * NEXT ADJACENT:   0 *     0 *      0 *      0 *      0 *      0 *      0 *      0 *      0 *      0 *       0 *
   *                    *       *        *        *        *        *        *        *        *        *         *
   *    CUMULATIVE: ----*-------*--------*--------*--------*--------*--------*--------*--------*--------*-------- *
   *                    *       *        *        *        *        *        *        *        *        *         *
   *             12    * 13     * 14     * 15     * 16     * 17     * 18     * 19     * 20     * 21     * 22      *
   * NEXT ADJACENT:   0 *     0 *      0 *      0 *      0 *      0 *      0 *      0 *      0 *      0 *       0 *
   *                    *       *        *        *        *        *        *        *        *        *         *
   *    CUMULATIVE: ----*-------*--------*--------*--------*--------*--------*--------*--------*--------*-------- *
   *                    *       *        *        *        *        *        *
   *             23    * 24     * 25     * 26     * 27     * 28     * TOTAL  *
   * NEXT ADJACENT:   0 *     0 *      0 *      0 *      1 *      0 *      1 *
   *                    *       *        *        *      1 *        *      1 *
   **** CUMULATIVE: ----*-------*--------*--------*--------*--------*--------*

   DOWNSTREAM
     UTILITY       U P S T R E A M    U T I L I T Y    I D E N T I F I C A T I O N    N U M B E R S

   48000000006175            00  00000000000000  00000000000000  00000000000000  00000000000000  00000000000000

                   00000000000000  00000000000000
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                           SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, S2377
DATE: 01/05/79
                                                                                                        PAGE:      7
PUB          UTILITY NAME               UTILITY ID NO  \ RECORD CODE  STATE  COUNTY  CITY                RETAIL POPULATION
                                                                                                         SERVED (X 1,000)
---------------------------------------------------------------------------------------------------------------------
470   GREENWOOD                         45132200000000    001439       SC     019    GREENWOOD               29

   RECORD KEY: 001440             ******************** E F F L U E N T   D I S C H A R G E ******************************************
                                  *
   SOURCE:  LAKE GREENWOOD        *                            PRIMARY      SECONDARY      TERTIARY       UNKNOWN        TOTAL
                                  * DISCHARGE FLOW, (CFS)
   ZERO WASTE CODE: 1             *            NEXT ADJACENT:        0            151             0             0          151
                                  *
   LATITUDE: 341526               *               CUMULATIVE: _ _ _ _ _0     _ _ _ _151     _ _ _ _ _0    _ _ _ _ _0     _ _ _ _151
                                  *
   LONGITUDE: 0820159             *   PERCENT WASTEWATER
                                  *            AVERAGE FLOW:    _ _ _ 0      _ _7   7       _ _ _ 0       _ _ _ 0        _ _7   7
                                  *
                                  *                LOW FLOW:    _ _ _ 0      _ _73  3       _ _ _ 0       _ _ _ 0        _ _73  3
   AVERAGE FLOW    1,972 CFS      *
                                  * NO. OF DISCHARGERS
   LOW FLOW        206 CFS        *         NEXT ADJACENT:           1             24             0             8           33
                                  *             WITH FLOW:           1             23             0             3           27
                                  *
                                  *            CUMULATIVE: _ _ _ _ _1/1    _ _ _ _ _24/23  _ _ _ _ _0    _ _ _ _ _8/3    _ _ _ _ _33/27
                                  *******************************************************************************************************
   NUMBER OF INDUSTRIAL
   DISCHARGERS *************************************************************************************************************************
   *               1        * 2        * 3        * 4        * 5        * 6        * 7        * 8        * 9        * 10       * 11
   * NEXT ADJACENT:        2 *        0 *        1 *        0 *        0 *        0 *        0 *        0 *       21 *        0 *        0
   *                         *          *          *          *          *          *          *          *          *          *
   *    CUMULATIVE:  _ _ _ 2 * _ _ _ _  * _ _ _ 1  * _ _ _ _  * _ _ _ _  * _ _ _ _  * _ _ _ _  * _ _ _ _  * _ _ _21  * _ _ _ _  * _ _ _ _
   *                         *          *          *          *          *          *          *          *          *          *
   *               12        * 13       * 14       * 15       * 16       * 17       * 18       * 19       * 20       * 21       * 22
   * NEXT ADJACENT:        0 *        0 *        0 *        0 *        3 *        0 *        0 *        1 *        0 *        0 *        0
   *                         *          *          *          *          *          *          *          *          *          *
   *    CUMULATIVE:  _ _ _ _ * _ _ _ _  * _ _ _ _  * _ _ _ _  * _ _ _ 3  * _ _ _ _  * _ _ _ _  * _ _ _ 1  * _ _ _ _  * _ _ _ _  * _ _ _ _
   *                         *          *          *          *          *          *          *
   *               23        * 24       * 25       * 26       * 27       * 28       *  TOTAL   *
   * NEXT ADJACENT:        3 *        1 *        6 *        0 *       38 *       34 *     110  *
   *                         *          *          *          *          *          *          *
   **** CUMULATIVE:  _ _ _ 3 * _ _ _ 1  * _ _ _ 6  * _ _ _ _  * _ _ _38  * _ _ _34  * _ _110   *
   DOWNSTREAM
    UTILITY        U P S T R E A M    U T I L I T Y    I D E N T I F I C A T I O N    N U M B E R S

   45231600000000   45128100000000  00000000000000  00000000000000  00000000000000  00000000000000  00000000000000
                    00000000000000  00000000000000
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                                  SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, 82377
DATE: 12/22/78                                                                                                   PAGE:   472

                                                                                                           RETAIL POPULATION
PUB           UTILITY NAME                UTILITY ID NO.   RECORD CODE  STATE  COUNTY  CITY                SERVED (X 1,000)
------------------------------------------------------------------------------------------------------------------------------
610   INDIANAPOLIS WATER CO               18403701500000     000482       IN     035   INDIANAPOLIS                680

   RECORD KEY: 000483          ******************** E F F L U E N T   D I S C H A R G E ******************************************
                               *                                                                                                  *
   SOURCE:  WHITE RIVER VIA    *                              PRIMARY        SECONDARY         TERTIARY         UNKNOWN        TOTAL *
                               * DISCHARGE FLOW,(CFS)                                                                             *
   ZERO WASTE CODE: 1          *             NEXT ADJACENT:         0               32                0              28           60 *
                               *                                                                                                  *
   LATITUDE: 394735            *                CUMULATIVE: _ _ _ _ _0     _ _ _ _ _32      _ _ _ _ _0      _ _ _ _ _28      _ _ _ _ _60 *
                               *                                                                                                  *
   LONGITUDE: 0861010          *   PERCENT WASTEWATER                                                                             *
                               *             AVERAGE FLOW:  _ _ _ . 0      _ _ 2 . 3        _ _ _ . 0        _ _ 2 . 0        _ _ 4 . 3 *
                               *                                                                                                  *
                               *                 LOW FLOW:  _ _ _ . 0      _ _59 . 3        _ _ _ . 0        _ _51 . 9        _111 . 1 *
   AVERAGE FLOW:   1,386 CFS   *                                                                                                  *
                               * NO. OF DISCHARGERS                                                                               *
   LOW FLOW:      54 CFS       *           NEXT ADJACENT:         0               14                0              16           30  *
                               *               WITH FLOW:         0               14                0               2           16  *
                               *                                                                                                  *
                               *              CUMULATIVE: _ _ _ _ _0     _ _ _ _ _17/17     _ _ _ _ _0      _ _ _ _ _16/2    _ _ _ _ _33/19 *
                               *                                                                                                  *
                               ****************************************************************************************************
   NUMBER OF INDUSTRIAL
   DISCHARGERS ***************************************************************************************************************
   *           1      * 2       * 3       * 4       * 5       * 6       * 7       * 8       * 9       * 10      * 11         *
   * NEXT ADJACENT:   6 *     0 *       1 *       1 *       1 *       0 *       1 *       0 *       0 *       0 *       0    *
   *                  *         *         *         *         *         *         *         *         *         *            *
   *    CUMULATIVE: _ _ _7 * _ _ _ _ * _ _ _1 * _ _ _1 * _ _ _1 * _ _ _ _ * _ _ _1 * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _   *
   *                  *         *         *         *         *         *         *         *         *         *            *
   *          12      * 13      * 14      * 15      * 16      * 17      * 18      * 19      * 20      * 21      * 22         *
   * NEXT ADJACENT:   3 *     0 *       0 *       0 *       0 *       0 *       0 *       1 *       1 *       1 *       0    *
   *                  *         *         *         *         *         *         *         *         *         *            *
   *    CUMULATIVE: _ _ _3 * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _1 * _ _ _1 * _ _ _1 * _ _ _ _   *
   *                  *         *         *         *         *         *         *
   *          23      * 24      * 25      * 26      * 27      * 28      *  TOTAL  *
   * NEXT ADJACENT:   5 *     0 *       6 *       0 *      37 *      32 *     96  *
   *                  *         *         *         *         *         *         *
   **** CUMULATIVE: _ _ _6 * _ _ _ _ * _ _ _5 * _ _ _ _ * _ _ _40 * _ _ _33 * _ _102 *

   DOWNSTREAM
    UTILITY         U P S T R E A M    U T I L I T Y    I D E N T I F I C A T I O N    N U M B E R S

   77777777777774   18590701500000  00000000000000  00000000000000  00000000000000  00000000000000  00000000000000

                    00000000000000  00000000000000
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                              SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, 82377
DATE: 12/22/78                                                                                                    PAGE:   489

                                                                                                      RETAIL POPULATION
SUB          UTILITY NAME                 UTILITY ID NO.   RECORD CODE  STATE  COUNTY  CITY             SERVED (X 1,000)
--------------------------------------------------------------------------------------------------------------------------------
610   JEFFERSON PARISH W W DISTRICT #2   22459401500000     000555       LA     017    MARRERO                600

   RECORD KEY: 000556         ******************** E F F L U E N T   D I S C H A R G E ****************************************
                              *                                                                                                *
   SOURCE:  MISSISSIPPI RIV   *                                PRIMARY       SECONDARY        TERTIARY         UNKNOWN         TOTAL  *
                              * DISCHARGE FLOW,(CFS)                                                                            *
   ZERO WASTE CODE: 1         *            NEXT ADJACENT:          26              11               0               0            37  *
                              *                                                                                                *
   LATITUDE: 300320           *               CUMULATIVE: - - - 1.027     - - - 6.267     - - - - 127     - - - - 537     - - - 7.958  *
                              *                                                                                                *
   LONGITUDE: 0903407         *   PERCENT WASTEWATER                                                                           *
                              *              AVERAGE FLOW:  - - - . 2     - - 1 . 4       - - - . 0       - - - . 1       - - 1 . 8  *
                              *                                                                                                *
                              *                  LOW FLOW:  - - - . -     - - - . -       - - - . -       - - - . -       - - - . -  *
   AVERAGE FLOW: 453,000 CFS  *                                                                                                *
                              * NO. OF DISCHARGERS                                                                             *
   LOW FLOW:        0 CFS     *            NEXT ADJACENT:           3               3               0               3             9  *
                              *                WITH FLOW:           3               3               0               0             6  *
                              *                                                                                                *
                              *               CUMULATIVE: - - - - 297/287- - - 2.912/2,760- - - -88/74 - - - 3.718/279- - - 7.015/3,400
                              *                                                                                                *
                              **************************************************************************************************

   NUMBER OF INDUSTRIAL
   DISCHARGERS ****************************************************************************************************************
   *                      1  *  2        *  3        *  4        *  5        *  6        *  7        *  8        *  9        *  10       *  11        *
   * NEXT ADJACENT:       0  *        0  *        0  *        0  *        0  *        0  *        1  *        0  *        0  *        0  *        0   *
   *                         *           *           *           *           *           *           *           *           *           *            *
   *    CUMULATIVE: - 3,236  * - 3,233   * - - 158   * - - 229   * - - - 62  * - - - 51  * - - 179   * - - - 3   * - - - 92  * - - - 92  * - - - 24   *
   *                         *           *           *           *           *           *           *           *           *           *            *
   *                     12  *  13       *  14       *  15       *  16       *  17       *  18       *  19       *  20       *  21       *  22        *
   * NEXT ADJACENT:       0  *        0  *        0  *        0  *        0  *        0  *        0  *        0  *        0  *        0  *        0   *
   *                         *           *           *           *           *           *           *           *           *           *            *
   *    CUMULATIVE: - - 150  * - - - 45  * - - 142   * - - 131   * - - - 87  * - - - 6   * - - - 45  * - - 151   * - - 221   * - - - 40  * - - - 11   *
   *                         *           *           *           *           *           *           *           *
   *                     23  *  24       *  25       *  26       *  27       *  28       *   TOTAL   *
   * NEXT ADJACENT:       2  *        0  *        0  *        0  *        9  *        2  *       14  *
   *                         *           *           *           *           *           *           *
   **** CUMULATIVE: - - 441  * - - 107   * - - 748   * - - - 29  * - 6.846   * - 6.493   * -20.573   *

   DOWNSTREAM
    UTILITY         U P S T R E A M    U T I L I T Y    I D E N T I F I C A T I O N    N U M B E R S

   22656501500000   22459001500000  00000000000000  00000000000000  00000000000000  00000000000000  00000000000000

                    00000000000000  00000000000000
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                       SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, S2377
DATE: 12/22/78                                                                                          PAGE:   572

                                                                                                  RETAIL POPULATION
Pub           UTILITY NAME              UTILITY ID NO.   RECORD CODE  STATE  COUNTY  CITY         SERVED (X 1,000)
-------------------------------------------------------------------------------------------------------------------
610   KANSAS CITY                       29421801500000     000785       MO     021   KANSAS CITY          750

 ECORD KEY: 000786            ******************** E F F L U E N T   D I S C H A R G E ***********************
                              *                                                                               *
 OURCE: MISSOURI RIVER        *                        PRIMARY     SECONDARY      TERTIARY      UNKNOWN     TOTAL *
                              * DISCHARGE FLOW,(CFS)                                                          *
 ERO WASTE CODE: 2            *         NEXT ADJACENT:       0             0             0            0         0 *
                              *                                                                               *
 ATITUDE: 091509              *            CUMULATIVE: - - - -148   - - - -422   - - - - -23   - - - -124   - - - -646 *
                              *                                                                               *
 ONGITUDE: 4351510            *   PERCENT WASTEWATER                                                          *
                              *          AVERAGE FLOW:  - - - . 1    - - 1 . 8    - - - . 0    - - - . 2    - - 1 . 2 *
                              *                                                                               *
                              *              LOW FLOW:  - - 1 . 6    - - 9 . 0    - -14 . 1    - - 2 . 6    - -13 . 7 *
 VERAGE FLOW:  54,690 CFS     *                                                                               *
                              * NO. OF DISCHARGERS                                                            *
 OW FLOW:   4,710 CFS         *        NEXT ADJACENT:       0             0             0            0         0 *
                              *            WITH FLOW:       0             0             0            0         0 *
                              *                                                                               *
                              *           CUMULATIVE: - - - - -32/32 - - - - 590/589- - - - -11/11 - - - - 534/31 - - - 1,167/663*
                              *                                                                               *
                              *********************************************************************************
 UMBER OF INDUSTRIAL
 ISCHARGERS ***********************************************************************************************
                    1    * 2       * 3       * 4       * 5       * 6       * 7       * 8       * 9       * 10      * 11      *
  NEXT ADJACENT:       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *
                         *         *         *         *         *         *         *         *         *         *         *
     CUMULATIVE: - - 214 * - - 199 * - - -40 * - - - 6 * - - - 3 * - - - 5 * - - -39 * - - - 1 * - - - 1 * - - - 3 * - - - - *
                         *         *         *         *         *         *         *         *         *         *         *
                 12      * 13      * 14      * 15      * 16      * 17      * 18      * 19      * 20      * 21      * 22      *
  NEXT ADJACENT:       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *
                         *         *         *         *         *         *         *         *         *         *         *
     CUMULATIVE: - - - 2 * - - - 4 * - - - 9 * - - -10 * - - - 3 * - - - - * - - - - * - - - 9 * - - -20 * - - - 2 * - - - - *
                         *         *         *         *         *         *         *
                 23      * 24      * 25      * 26      * 27      * 28      *  TOTAL  *
  NEXT ADJACENT:       0 *       0 *       0 *       0 *       0 *       0 *       0 *
                         *         *         *         *         *         *         *
 *** CUMULATIVE: - - -40 * - - - 2 * - - -18 * - - - 1 * - 1,300 * - 1,043 * - 2,863 *

 OWNSTREAM
  UTILITY         U P S T R E A M    U T I L I T Y    I D E N T I F I C A T I O N    N U M B E R S

29415801540000    20465301500000  00000000000000  20601701520000  00000000000000  00000000000000  00000000000000

                  00000000000000  00000000000000
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DATE: 12/22/78          SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, 82377
                                                                                                    PAGE:   363
                                                                                          RETAIL POPULATION
Pud          UTILITY NAME               UTILITY ID NO.   RECORD CODE  STATE  COUNTY  CITY            SERVED (X 1,000)
-----------------------------------------------------------------------------------------------------------------
430   LAGRANGE WATER SYSTEM              13489501500000     000388       GA     021    LAGRANGE                 32

   RECORD KEY: 000389          ******************** E F F L U E N T   D I S C H A R G E ***************************
                               *                                                                                  *
   SOURCE:  CHATTAHOOCHEE R    *                          PRIMARY      SECONDARY      TERTIARY      UNKNOWN      TOTAL *
                               * DISCHARGE FLOW,(CFS)                                                             *
   ZERO WASTE CODE: 1          *           NEXT ADJACENT:       0            184             0            0        184 *
                               *                                                                                  *
   LATITUDE: 330400            *              CUMULATIVE: ------0      -----200      ------0      ------0     -----200 *
                               *                                                                                  *
   LONGITUDE: 0850840          *   PERCENT WASTEWATER                                                             *
                               *            AVERAGE FLOW:  ---.0        --3.6        ---.0        ---.0        --3.6 *
                               *                                                                                  *
                               *                LOW FLOW:  ---.0       --26.5        ---.0        ---.0       --26.5 *
   AVERAGE FLOW:   5,632 CFS   *                                                                                  *
                               * NO. OF DISCHARGERS                                                               *
   LOW FLOW:     754 CFS       *          NEXT ADJACENT:       0              8             0            0          8 *
                               *              WITH FLOW:       0              8             0            0          6 *
                               *                                                                                  *
                               *             CUMULATIVE: ------0     -----15/14     ------0     ------1/1   -----16/15 *
                               *                                                                                  *
                               ************************************************************************************
   NUMBER OF INDUSTRIAL
   DISCHARGERS *******************************************************************************************************
   *                 1   * 2       * 3       * 4       * 5       * 6       * 7       * 8       * 9       * 10      * 11      *
   * NEXT ADJACENT:    0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *       2 *       0 *       0 *
   *                     *         *         *         *         *         *         *         *         *         *         *
   *    CUMULATIVE: ---- * ------- * ------2 * ------- * ------- * ------- * ------- * ------- * ------3 * ------- * ------- *
   *                     *         *         *         *         *         *         *         *         *         *         *
   *                12   * 13      * 14      * 15      * 16      * 17      * 18      * 19      * 20      * 21      * 22      *
   * NEXT ADJACENT:    0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *
   *                     *         *         *         *         *         *         *         *         *         *       1 *
   *    CUMULATIVE: ---- * ------- * ------- * ------- * ------- * ------- * ------- * ------- * ------- * ------- * ------- *
   *                     *         *         *         *         *         *         *
   *                23   * 24      * 25      * 26      * 27      * 28      *  TOTAL  *
   * NEXT ADJACENT:    0 *       0 *       1 *       0 *       8 *       1 *      12 *
   *                   1 *         *       2 *         *      16 *         *      28 *
   **** CUMULATIVE: ---- * ------- * ------- * ------- * ------- * ------- * ------- *

   DOWNSTREAM
    UTILITY       U P S T R E A M   U T I L I T Y   I D E N T I F I C A T I O N   N U M B E R S

   01473001520000   13044001500000  13268401540000  13282701500000  00000000000000  00000000000000  00000000000000

                    00000000000000  00000000000000
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                                SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, 52377
DATE: 12/22/78                                                                                                      PAGE:   494

PUB           UTILITY NAME                  UTILITY ID NO.   RECORD CODE  STATE  COUNTY  CITY                RETAIL POPULATION
                                                                                                              SERVED (X 1,000)
------------------------------------------------------------------------------------------------------------------------------
610   LOUISVILLE WATER COMPANY              21478801500000     000540       KY    037    LOUISVILLE                  700

  RECORD KEY: 000541           ******************** E F F L U E N T   D I S C H A R G E *******************************************
                               *                                                                                                    *
  SOURCE:  OHIO RIVER          *                          PRIMARY        SECONDARY        TERTIARY         UNKNOWN            TOTAL *
                               * DISCHARGE FLOW,(CFS)                                                                               *
  ZERO WASTE CODE: 0           *         NEXT ADJACENT:         1               13               0               0               14 *
                               *                                                                                                    *
  LATITUDE: 381652             *           CUMULATIVE: - - - - 390    - - - - - 988    - - - - - 28    - - - - - 133    - - - 1,539 *
                               *                                                                                                    *
  LONGITUDE: 0854209           *   PERCENT WASTEWATER                                                                               *
                               *         AVERAGE FLOW:  - - - . 3     - - - . 9        - - - . 0       - - - . 1        - - 1 . 4  *
                               *                                                                                                    *
                               *             LOW FLOW:  - - 6 . 1     - - 15 . 5       - - - . 4       - - 2 . 1        - - 24 . 2 *
  AVERAGE FLOW: 112,300 CFS    *                                                                                                    *
                               * NO. OF DISCHARGERS                                                                                 *
  LOW FLOW:   6,348 CFS        *         NEXT ADJACENT:        1                8               0               4               13  *
                               *            WITH FLOW:         1                8               0               0                9  *
                               *                                                                                                    *
                               *          CUMULATIVE: - - - - - 75/72 - - - - - 331/313 - - - - - 16/14 - - - - - 457/88 - - - - - 879/487*
                               *                                                                                                    *
                               ******************************************************************************************************
  NUMBER OF INDUSTRIAL
  DISCHARGERS ****************************************************************************************************************
  *                     1   * 2         * 3         * 4         * 5         * 6         * 7         * 8         * 9         * 10        * 11        *
  * NEXT ADJACENT:      3   *       0   *       1   *       0   *       0   *       0   *       1   *       0   *       0   *       5   *       0   *
  *                         *           *           *           *           *           *           *           *           *           *           *
  *    CUMULATIVE: - - - 94 * - 2,388   * - - - 16  * - - - 16  * - - - 4   * - - - 2   * - - - 25  * - - - 1   * - - - 5   * - - - 13  * - - - 3   *
  *                         *           *           *           *           *           *           *           *           *           *           *
  *                    12   * 13        * 14        * 15        * 16        * 17        * 18        * 19        * 20        * 21        * 22        *
  * NEXT ADJACENT:      0   *       0   *       2   *       3   *       0   *       1   *       0   *       0   *       0   *       0   *       1   *
  *                         *           *           *           *           *           *           *           *           *           *           *
  *    CUMULATIVE: - - - 22 * - - - 5   * - - - 18  * - - - 31  * - - - 23  * - - - - - * - - - 11  * - - - 22  * - - 121   * - - - 22  * - - - 2   *
  *                         *           *           *           *           *           *           *
  *                    23   * 24        * 25        * 26        * 27        * 28        *  TOTAL    *
  * NEXT ADJACENT:      2   *       0   *       2   *       0   *      18   *      22   *     61    *
  *                         *           *           *           *           *           *           *
  **** CUMULATIVE: - - 106  * - - - 69  * - - 223   * - - - 5   * - 1,015   * - 1,290   * - 5,544   *

  DOWNSTREAM
   UTILITY         U P S T R E A M    U T I L I T Y    I D E N T I F I C A T I O N    N U M B E R S

  18265101500000   00000000000000  00000000000000  00000000000000  00000000000000  00000000000000  00000000000000

                   18413601540000  00000000000000
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                           SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, 82377
DATE: 12/22/78                                                                                                PAGE:  487

                                                                                                         RETAIL POPULATION
PUH           UTILITY NAME              UTILITY ID NO.   RECORD CODE  STATE  COUNTY  CITY                SERVED (X 1,000)
----------------------------------------------------------------------------------------------------------------------------
610   NEW ORLEANS                       22656501500000     000564      LA     017    NEW ORLEANS                550

   RECORD KEY: 000565         ******************* E F F L U E N T   D I S C H A R G E ********************************
                              *                                                                                      *
   SOURCE:  MISSISSIPPI RIV   *                        PRIMARY       SECONDARY       TERTIARY       UNKNOWN       TOTAL *
                              * DISCHARGE FLOW,(CFS)                                                                 *
   ZERO WASTE CODE: 1         *           NEXT ADJACENT:     7               1              0             0           8 *
                              *                                                                                      *
   LATITUDE: 300320           *              CUMULATIVE: _ _ _ 1,034   _ _ _ 6,268   _ _ _ _ 127   _ _ _ _ 537   _ _ _ 7,966 *
                              *                                                                                      *
   LONGITUDE: 0903407         *   PERCENT WASTEWATER                                                                 *
                              *           AVERAGE FLOW: _ _ _ . 2     _ _ 1 . 4     _ _ _ . 0     _ _ _ . 1     _ _ 1 . 8 *
                              *                                                                                      *
                              *               LOW FLOW: _ _ _ . _     _ _ _ . _     _ _ _ . _     _ _ _ . _     _ _ _ . _ *
                              *                                                                                      *
   AVERAGE FLOW: 453,000 CFS  *                                                                                      *
                              * NO. OF DISCHARGERS                                                                   *
   LOW FLOW:       0 CFS      *           NEXT ADJACENT:     2               1              0             0           3 *
                              *               WITH FLOW:     2               1              0             0           3 *
                              *                                                                                      *
                              *              CUMULATIVE: _ _ _ 299/289 _ _ 2,913/2,781 _ _ _ 88/74 _ _ 3,718/279 _ _ 7,018/3,403
                              *                                                                                      *
                              ****************************************************************************************

   NUMBER OF INDUSTRIAL
   DISCHARGERS *************************************************************************************************************
   *                  1  *  2     *  3     *  4     *  5     *  6     *  7      *  8     *  9     *  10    *  11    *
   * NEXT ADJACENT:   0  *     0  *     0  *     0  *     0  *     0  *      0  *     0  *     0  *     0  *     0  *
   *                     *        *        *        *        *        *         *        *        *        *        *
   *    CUMULATIVE: _ 3,236 * _ 3,233 * _ _ 158 * _ _ 229 * _ _ _ 62 * _ _ _ 51 * _ _ 179 * _ _ _ 3 * _ _ _ 92 * _ _ _ 92 * _ _ _ 24 *
   *                     *        *        *        *        *        *         *        *        *        *        *
   *                 12  *  13    *  14    *  15    *  16    *  17    *  18     *  19    *  20    *  21    *  22    *
   * NEXT ADJACENT:   1  *     0  *     0  *     0  *     0  *     0  *      0  *     0  *     0  *     0  *     0  *
   *                     *        *        *        *        *        *         *        *        *        *        *
   *    CUMULATIVE: _ _ 151 * _ _ _ 45 * _ _ 142 * _ _ 131 * _ _ _ 87 * _ _ _ 6 * _ _ _ 45 * _ _ 151 * _ _ 221 * _ _ _ 40 * _ _ _ 11 *
   *                     *        *        *        *        *        *         *
   *                 23  *  24    *  25    *  26    *  27    *  28    *  TOTAL  *
   * NEXT ADJACENT:   0  *     0  *     0  *     0  *     3  *     2  *      6  *
   *                     *        *        *        *        *        *         *
   **** CUMULATIVE: _ _ 441 * _ _ 107 * _ _ 748 * _ _ _ 29 * _ 6,849 * _ 6,495 * _ 20,579 *

   DOWNSTREAM
     UTILITY        U P S T R E A M    U T I L I T Y    I D E N T I F I C A T I O N    N U M B E R S

   22386101500000   22459401500000  00000000000000  00000000000000  00000000000000  00000000000000  00000000000000

                    00000000000000  00000000000000
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                          SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, S2377                      PAGE:   452
DATE: 12/22/78
                                                                                                            RETAIL POPULATION
PUB            UTILITY NAME                UTILITY ID NO.   RECORD CODE  STATE  COUNTY  CITY                 SERVED (X 1,000)
-------------------------------------------------------------------------------------------------------------------------------
500   OSHKOSH                              55628801500000     001691       WI    031    OSHKOSH                   53

   RECORD KEY: 001692              ******************** E F F L U E N T   D I S C H A R G E ************************************
                                   *                                                                                            *
   SOURCE:  LAKE WINNEBAGO         *                         PRIMARY      SECONDARY       TERTIARY        UNKNOWN        TOTAL  *
                                   * DISCHARGE FLOW,(CFS)                                                                       *
   ZERO WASTE CODE: 1              *          NEXT ADJACENT:      11             97              0             25           133  *
                                   *                                                                                            *
   LATITUDE: 440125                *             CUMULATIVE: - - - - -11   - - - - -97   - - - - - 0   - - - - -25   - - - -133  *
                                   *                                                                                            *
   LONGITUDE: 0883055              *   PERCENT WASTEWATER                                                                       *
                                   *            AVERAGE FLOW: - - - . 3    - - 2 . 4     - - - . 0     - - - . 6     - - 3 . 3  *
                                   *                                                                                            *
                                   *                LOW FLOW: - - 1 . 1    - - 9 . 7     - - - . 0     - - 2 . 5     - -13 . 0  *
                                   *                                                                                            *
   AVERAGE FLOW:   4,016 CFS       * NO. OF DISCHARGERS                                                                         *
                                   *          NEXT ADJACENT:       7             26              1             11            45  *
   LOW FLOW:   1,000 CFS           *              WITH FLOW:       7             26              1              5            39  *
                                   *                                                                                            *
                                   *             CUMULATIVE: - - - - - 7/7 - - - - -26/26 - - - - - 1/1  - - - - -11/5 - - - - -45/39 *
                                   *                                                                                            *
                                   **********************************************************************************************

   NUMBER OF INDUSTRIAL
   DISCHARGERS ********************************************************************************************************************
   *                 1    * 2       * 3       * 4       * 5       * 6       * 7       * 8       * 9       * 10      * 11       *
   * NEXT ADJACENT:     4 *       0 *       2 *       9 *       8 *       1 *       1 *       0 *       3 *       2 *       0  *
   *                      *         *         *         *         *         *         *         *         *         *          *
   *    CUMULATIVE: - - 4 * - - - - * - - - 2 * - - - 9 * - - - 8 * - - - 1 * - - - 1 * - - - - * - - - 3 * - - - 2 * - - - -  *
   *                      *         *         *         *         *         *         *         *         *         *          *
   *                12    * 13      * 14      * 15      * 16      * 17      * 18      * 19      * 20      * 21      * 22       *
   * NEXT ADJACENT:    21 *       3 *       0 *       3 *       0 *       0 *       0 *       2 *       0 *       0 *       0  *
   *                      *         *         *         *         *         *         *         *         *         *          *
   *    CUMULATIVE: - -21 * - - - 3 * - - - - * - - - 3 * - - - - * - - - - * - - - - * - - - 2 * - - - - * - - - - * - - - -  *
   *                      *         *         *         *         *         *         *         *
   *                23    * 24      * 25      * 26      * 27      * 28      *  TOTAL  *
   * NEXT ADJACENT:     0 *       0 *      25 *       0 *      54 *      35 *     173 *
   *                      *         *         *         *         *         *         *
   **** CUMULATIVE: - - - * - - - - * - - -25 * - - - - * - - -54 * - - -35 * - -173 *

   DOWNSTREAM
     UTILITY       U P S T R E A M    U T I L I T Y    I D E N T I F I C A T I O N    N U M B E R S

             00             00 00000000000000  00000000000000  00000000000000  00000000000000  00000000000000

                   00000000000000  00000000000000
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DATE: 12/22/78          SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, 52377
                                                                                                   PAGE:  147

PUB          UTILITY NAME             UTILITY ID NO.  RECORD CODE  STATE  COUNTY  CITY                RETAIL POPULATION
                                                                                                      SERVED (X 1,000)
--------------------------------------------------------------------------------------------------------------------
240  PASSAIC VALLEY WATER COMMISSION  34640701500000    000872       NJ    003    LITTLE FALLS               333

  RECORD KEY: 000873        ******************** E F F L U E N T   D I S C H A R G E ***************************
                            *
  SOURCE:  PASSAIC RIVER    *                         PRIMARY     SECONDARY     TERTIARY     UNKNOWN       TOTAL *
                            * DISCHARGE FLOW,(CFS)                                                               *
  ZERO WASTE CODE: 1        *         NEXT ADJACENT:        0            37            1           3          41 *
                            *                                                                                    *
  LATITUDE: 405304          *            CUMULATIVE: _____0      _____46       _____1      _____11      _____58 *
                            *                                                                                    *
  LONGITUDE: 0741356        *   PERCENT WASTEWATER                                                               *
                            *          AVERAGE FLOW: ___._0     __4_._0       ___._0      ___._9       __4_._9 *
                            *                                                                                    *
                            *              LOW FLOW: ___._0     _148_._3      __3_._2     __35_._4     _186_._9 *
  AVERAGE FLOW:   1,164 CFS *                                                                                    *
                            * NO. OF DISCHARGERS                                                                 *
  LOW FLOW:       31 CFS    *         NEXT ADJACENT:        0            10            1           5          16 *
                            *             WITH FLOW:        0            10            1           1             *
                            *                                                                               12   *
                            *            CUMULATIVE: _____0      _____21/20     _____4/4    _____9/3    _____44/27 *
                            *                                                                                    *
                            **************************************************************************************
  NUMBER OF INDUSTRIAL
  DISCHARGERS ***********************************************************************************************
  *                    1 * 2     * 3     * 4     * 5     * 6     * 7     * 8     * 9     * 10    * 11    *
  * NEXT ADJACENT:     4 *     0 *     0 *     1 *     1 *     0 *     3 *     0 *     0 *     0 *     0 *
  *                      *       *       *       *       *       *       *       *       *       *       *
  *    CUMULATIVE: ___7 * ____  * ____  * ___1  * ___1  * ____  * ___4  * ____  * ____  * ____  * ____  *
  *                      *       *       *       *       *       *       *       *       *       *       *
  *                   12 * 13    * 14    * 15    * 16    * 17    * 18    * 19    * 20    * 21    * 22    *
  * NEXT ADJACENT:     3 *     1 *     3 *     1 *     3 *     0 *     1 *     5 *     0 *     0 *     0 *
  *                      *       *       *       *       *       *       *       *       *       *       *
  *    CUMULATIVE: ___4 * ___1  * ___7  * ___1  * ___3  * ____  * ___1  * ___8  * ____  * ___1  * ____  *
  *                      *       *       *       *       *       *       *
  *                   23 * 24    * 25    * 26    * 27    * 28    *  TOTAL *
  * NEXT ADJACENT:     0 *     1 *    11 *     0 *    16 *    25 *     79 *
  *                      *       *       *       *       *       *        *
  **** CUMULATIVE: ___2 * ___1  * __16  * ____  * __46  * __50  * __154  *

  DOWNSTREAM
   UTILITY       U P S T R E A M   U T I L I T Y   I D E N T I F I C A T I O N   N U M B E R S

            00   34180101530000  00000000000000  34567001500000  00000000000000  00000000000000  00000000000000

                 00000000000000  00000000000000
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                              SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, S2377
DATE: 12/22/78                                                                                                   PAGE:   360

                                                                                                          RETAIL POPULATION
PUB           UTILITY NAME               UTILITY ID NO.   RECORD CODE  STATE  COUNTY  CITY                SERVED (X 1,000)
------------------------------------------------------------------------------------------------------------------------------
430   1119 BROAD STREET                  01643001500000     000029      AL     047    PHENIX CITY                 28

  RECORD KEY: 000030           ******************** E F F L U E N T   D I S C H A R G E ******************************************
                               *                                                                                                   *
  SOURCE:  CHATTAHOOCHEE R     *                              PRIMARY      SECONDARY       TERTIARY       UNKNOWN          TOTAL   *
                               * DISCHARGE FLOW,(CFS)                                                                              *
  ZERO WASTE CODE: 0           *            NEXT ADJACENT:          0              0              0             0              0   *
                               *                                                                                                   *
  LATITUDE: 322908             *              CUMULATIVE: _ _ _ _ _ 0    _ _ _ _ 214    _ _ _ _ _ 0   _ _ _ _ _ 0     _ _ _ _ 214   *
                               *                                                                                                   *
  LONGITUDE: 0845949           *   PERCENT WASTEWATER                                                                              *
                               *            AVERAGE FLOW:  _ _ _ . 0      _ _ 3 . 2       _ _ _ . 0      _ _ _ . 0      _ _ 3 . 2  *
                               *                                                                                                   *
                               *                LOW FLOW:  _ _ _ . 0      _ _ 20 . 4      _ _ _ . 0      _ _ _ . 0      _ _ 20 . 4 *
  AVERAGE FLOW:   6,765 CFS    *                                                                                                   *
                               * NO. OF DISCHARGERS                                                                                *
  LOW FLOW:   1,050 CFS        *          NEXT ADJACENT:          0              0              0             0              0     *
                               *              WITH FLOW:          0              0              0             0              0     *
                               *                                                                                                   *
                               *             CUMULATIVE: _ _ _ _ _ 1/1   _ _ _ _ _ 19/18  _ _ _ _ _ 0   _ _ _ _ _ 1/9   _ _ _ _ _ 21/20 *
                               *                                                                                                   *
                               *****************************************************************************************************

  NUMBER OF INDUSTRIAL
  DISCHARGERS ***************************************************************************************************************
  *                  1    * 2        * 3        * 4        * 5        * 6        * 7        * 8        * 9        * 10       * 11       *
  * NEXT ADJACENT:      0 *        0 *        0 *        0 *        0 *        0 *        0 *        0 *        1 *        0 *        0 *
  *                       *          *          *          *          *          *          *          *          *          *          *
  *    CUMULATIVE: _ _ _ _ * _ _ _ _ * _ _ _ 2  * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ 7  * _ _ _ _ * _ _ _ _  *
  *                       *          *          *          *          *          *          *          *          *          *          *
  *                 12    * 13       * 14       * 15       * 16       * 17       * 18       * 19       * 20       * 21       * 22       *
  * NEXT ADJACENT:      0 *        0 *        0 *        0 *        0 *        0 *        0 *        0 *        0 *        0 *        0 *
  *                       *          *          *          *          *          *          *          *          *          *          *
  *    CUMULATIVE: _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ 1  *
  *                       *          *          *          *          *          *          *          *
  *                 23    * 24       * 25     2 * 26       * 27       * 28       *  TOTAL   *
  * NEXT ADJACENT:      0 *        0 *        1 *        0 *        0 *        1 *        3 *
  *                       *          *          *          *          *          *          *
  **** CUMULATIVE: _ _ _ 1 * _ _ _ _ * _ _ _ 3  * _ _ _ _ * _ _ _ 22 * _ _ _ 6  * _ _ _ 42 *

  DOWNSTREAM
   UTILITY        U P S T R E A M    U T I L I T Y    I D E N T I F I C A T I O N    N U M B E R S

  13199101500000  01473001520000  00000000000000  00000000000000  00000000000000  00000000000000  00000000000000

                  00000000000000  00000000000000
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                              SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, 82377
DATE: 12/22/78                                                                                                PAGE:   265

                                                                                                        RETAIL POPULATION
PUB           UTILITY NAME              UTILITY ID NO,   RECORD CODE  STATE  COUNTY  CITY               SERVED (X 1,000)
-------------------------------------------------------------------------------------------------------------------------
320   PHILADELPHIA SUBURBAN WATER CO     42099201510000     001217       PA     003    BRYN MAWR                 820

   RECORD KEY: 001220         ******************** E F F L U E N T   D I S C H A R G E ****************************************
                              *                                                                                              *
   SOURCE:  NESHAMINY CREEK   *                          PRIMARY        SECONDARY        TERTIARY        UNKNOWN         TOTAL *
                              * DISCHARGE FLOW,(CFS)                                                                         *
   ZERO WASTE CODE: 1         *           NEXT ADJACENT:       0                4               0              7            11 *
                              *                                                                                              *
   LATITUDE: 400901           *              CUMULATIVE: _ _ _ _ _0     _ _ _ _ _4      _ _ _ _ _0     _ _ _ _ _7    _ _ _ _ _11 *
                              *                                                                                              *
   LONGITUDE: 0745724         *   PERCENT WASTEWATER                                                                         *
                              *            AVERAGE FLOW:  _ _ _ . 0      _ _1 . 4        _ _ _ . 0       _ _2 . 4      _ _3 . 8  *
                              *                                                                                              *
                              *                LOW FLOW:  _ _ _ . 0      _ _36 . 0       _ _ _ . 0       _ _64 . 0     _100 . 0  *
   AVERAGE FLOW:     286 CFS  *                                                                                              *
                              * NO, OF DISCHARGERS                                                                           *
   LOW FLOW:      11 CFS      *         NEXT ADJACENT:        0                6               0              3             9 *
                              *             WITH FLOW:        0                6               0              2             8 *
                              *                                                                                              *
                              *             CUMULATIVE: _ _ _ _ _0    _ _ _ _ _6/6   _ _ _ _ _0     _ _ _ _ _3/2  _ _ _ _ _9/8 *
                              *                                                                                              *
                              ************************************************************************************************
   NUMBER OF INDUSTRIAL
   DISCHARGERS ******************************************************************************************************************
   *                1    * 2         * 3         * 4         * 5         * 6         * 7         * 8         * 9         * 10        * 11        *
   * NEXT ADJACENT:      2 *       0 *         0 *         0 *         1 *         0 *         0 *         0 *         0 *         0 *         0 *
   *                     *           *           *           *           *           *           *           *           *           *           *
   *    CUMULATIVE: _ _ _2 * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _1 * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ *
   *                     *           *           *           *           *           *           *           *           *           *           *
   *               12    * 13        * 14        * 15        * 16        * 17        * 18        * 19        * 20        * 21        * 22        *
   * NEXT ADJACENT:      0 *         0 *         0 *         1 *         0 *         0 *         0 *         0 *         0 *         0 *         0 *
   *                     *           *           *           *           *           *           *           *           *           *           *
   *    CUMULATIVE: _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _1 * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ *
   *                     *           *           *           *           *           *           *
   *               23    * 24        * 25        * 26        * 27        * 28        *   TOTAL   *
   * NEXT ADJACENT:      0 *         2 *         2 *         0 *        10 *        12 *        30 *
   *                     *           *           *           *           *           *           *
   **** CUMULATIVE: _ _ _ _ * _ _ _2 * _ _ _2 * _ _ _ _ * _ _ _10 * _ _ _12 * _ _ _30 *

   DOWNSTREAM
    UTILITY        U P S T R E A M    U T I L I T Y    I D E N T I F I C A T I O N    N U M B E R S

   42992031500000           00  00000000000000  00000000000000  00000000000000  00000000000000  00000000000000

                   00000000000000  00000000000000
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                                    SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, S2377
DATE: 12/22/78                                                                                                        PAGE:   295

PUB            UTILITY NAME                 UTILITY ID NO.   RECORD CODE  STATE  COUNTY  CITY                  RETAIL POPULATION
                                                                                                                SERVED (X 1,000)
---------------------------------------------------------------------------------------------------------------------------------
320   PHILA SUBR W CO                       42992031500000     001383      PA     001    MIDDLETOWN TWP                759

   RECORD KEY: 001384           ******************** E F F L U E N T   D I S C H A R G E ****************************************
                                *                                                                                              *
   SOURCE:  NESHAMINY CR        *                                 PRIMARY       SECONDARY        TERTIARY       UNKNOWN        TOTAL *
                                * DISCHARGE FLOW,(CFS)                                                                         *
   ZERO WASTE CODE: 2           *            NEXT ADJACENT:             0               0               0             0            0 *
                                *                                                                                              *
   LATITUDE: 000000             *               CUMULATIVE: - - - - - 0   - - - - - 4   - - - - - 0   - - - - - 7   - - - - - 11 *
                                *                                                                                              *
   LONGITUDE: 0000000           *   PERCENT WASTEWATER                                                                         *
                                *             AVERAGE FLOW:   - - - . 0   - - 1 . 4     - - - . 0     - - 2 . 4     - - 3 . 8  *
                                *                                                                                              *
                                *                 LOW FLOW:   - - - . 0   - - 36 . 4    - - - . 0     - - 63 . 6    - 100 . 0  *
   AVERAGE FLOW:     286 CFS    *                                                                                              *
                                * NO. OF DISCHARGERS                                                                           *
   LOW FLOW:      11 CFS        *           NEXT ADJACENT:            0               0               0             0            0 *
                                *               WITH FLOW:            0               0               0             0            0 *
                                *                                                                                              *
                                *             CUMULATIVE: - - - - - 0   - - - - - 6/0  - - - - - 0   - - - - - 3/0  - - - - - 9  *
                                *                                                                                              *
                                ************************************************************************************************
   NUMBER OF INDUSTRIAL
   DISCHARGERS ***********************************************************************************************************
   *                   1     * 2       * 3       * 4       * 5       * 6       * 7       * 8       * 9       * 10      * 11       *
   * NEXT ADJACENT:        0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0  *
   *                         *         *         *         *         *         *         *         *         *         *          *
   *    CUMULATIVE: - - - 2  * - - - - * - - - - * - - - - * - - - 1 * - - - - * - - - - * - - - - * - - - - * - - - - * - - - -  *
   *                         *         *         *         *         *         *         *         *         *         *          *
   *                  12     * 13      * 14      * 15      * 16      * 17      * 18      * 19      * 20      * 21      * 22       *
   * NEXT ADJACENT:        0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0  *
   *                         *         *         *         *         *         *         *         *         *         *          *
   *    CUMULATIVE: - - - -  * - - - - * - - - - * - - - 1 * - - - - * - - - - * - - - - * - - - - * - - - - * - - - - * - - - -  *
   *                         *         *         *         *         *         *         *
   *                  23     * 24      * 25      * 26      * 27      * 28      *  TOTAL  *
   * NEXT ADJACENT:        0 *       0 *       0 *       0 *       0 *       0 *       0 *
   *                         *         *         *         *         *         *         *
   **** CUMULATIVE: - - - -  * - - - 2 * - - - 2 * - - - - * - - -10 * - - -12 * - - -30 *

   DOWNSTREAM
     UTILITY         U P S T R E A M    U T I L I T Y    I D E N T I F I C A T I O N    N U M B E R S

   42992051500000    42099201510000 00000000000000 00000000000000 00000000000000 00000000000000 00000000000000

                     00000000000000 00000000000000
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                          SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, 82377
DATE: 12/22/78                                                                                          PAGE:  286

                                                                                                   RETAIL POPULATION
SUB          UTILITY NAME                  UTILITY ID NO.  RECORD CODE  STATE  COUNTY  CITY        SERVED (X 1,000)
--------------------------------------------------------------------------------------------------------------------
320  PHILADELPHIA WATER DEPARTMENT         42654401500000    001312       PA     003   PHILADELPHIA        1950

  RECORD KEY: 001313          ******************* E F F L U E N T   D I S C H A R G E ***************************
                              *                                                                                 *
  SOURCE:  SCHUYLKILL RIVE    *                       PRIMARY      SECONDARY      TERTIARY      UNKNOWN     TOTAL *
                              * DISCHARGE FLOW,(CFS)                                                            *
  ZERO WASTE CODE: 1          *        NEXT ADJACENT:      10             28             8            6        46 *
                              *                                                                                 *
  LATITUDE: 395909            *          CUMULATIVE: -----12       -----69       ------9      ------1   -----91 *
                              *                                                                                 *
  LONGITUDE: 0751300          *   PERCENT WASTEWATER                                                            *
                              *        AVERAGE FLOW:  ---.5         --2.6         ---.3        ---.0      --3.5 *
                              *                                                                                 *
                              *            LOW FLOW:  --16.0        --92.0        --12.0       --1.3      -121.3 *
  AVERAGE FLOW:   2,627 CFS   *                                                                                 *
                              * NO. OF DISCHARGERS                                                              *
  LOW FLOW:        75 CFS     *        NEXT ADJACENT:       2              9              2            6        19 *
                              *           WITH FLOW:       2              9              2            4        17 *
                              *                                                                                 *
                              *          CUMULATIVE: -----4/2    -----37/22    -----3/3     -----21/14  -----65/31 *
                              *                                                                                 *
                              ***********************************************************************************
  NUMBER OF INDUSTRIAL
  DISCHARGERS ***************************************************************************************************
  *              1     * 2     * 3     * 4     * 5     * 6     * 7     * 8     * 9     * 10    * 11    *
  * NEXT ADJACENT:  3  *    0  *    0  *    1  *    0  *    0  *    0  *    0  *    0  *    0  *    0  *
  *                    *       *       *       *       *       *       *       *       *       *       *
  *   CUMULATIVE: ---11* ---2  * ---5  * ---3  * ---1  * ---1  * ---2  * ----  * ---2  * ----  * ---2  *
  *                    *       *       *       *       *       *       *       *       *       *       *
  *             12     * 13    * 14    * 15    * 16    * 17    * 18    * 19    * 20    * 21    * 22    *
  * NEXT ADJACENT:  4  *    1  *    2  *    1  *    1  *    0  *    0  *    2  *    1  *    0  *    0  *
  *                    *       *       *       *       *       *       *       *       *       *       *
  *   CUMULATIVE: ---6 * ---1  * ---7  * ---3  * ---2  * ----  * ---1  * --10  * ---2  * ----  * ----  *
  *                    *       *       *       *       *       *       *
  *             23     * 24    * 25    * 26    * 27    * 28    * TOTAL *
  * NEXT ADJACENT:  4  *    7  *    9  *    0  *   20  *   11  *    62 *
  *                    *       *       *       *       *       *       *
  **** CUMULATIVE: ---6* ---8  * ---9  * ---3  * --69  * --59  * --240 *

  DOWNSTREAM
   UTILITY        U P S T R E A M    U T I L I T Y    I D E N T I F I C A T I O N    N U M B E R S

          00      42999591500000  42099201510000                 00000000000000  00000000000000  00000000000000

                  00000000000000  00000000000000
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                                      SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, 82377
DATE: 12/22/78                                                                                                        PAGE:   512

PUB          UTILITY NAME              UTILITY ID NO.   RECORD CODE  STATE  COUNTY  CITY                       RETAIL POPULATION
                                                                                                               SERVED (X 1,000)
------------------------------------------------------------------------------------------------------------------------------------
610   PUEBLO - CITY OF - BRD OF WTR CM   08745201510000      000224       CO     005    PUEBLO                             95

   RECORD KEY: 000225         ******************** E F F L U E N T   D I S C H A R G E ****************************************
                              *
   SOURCE:  ARKANSAS RIVER    *                              PRIMARY       SECONDARY        TERTIARY        UNKNOWN            TOTAL *
                              * DISCHARGE FLOW,(CFS)                                                                                *
   ZERO WASTE CODE: 1         *           NEXT ADJACENT:           0              52               2              0               54 *
                              *                                                                                                     *
   LATITUDE: 000000           *              CUMULATIVE: - - - - - 0     - - - - - 52     - - - - - 2    - - - - - 0     - - - - - 54 *
                              *                                                                                                     *
   LONGITUDE: 0000000         *   PERCENT WASTEWATER                                                                                *
                              *            AVERAGE FLOW: - - - . 0       - - 7 . 3        - - - . 3       - - - . 0        - - 7 . 6 *
                              *                                                                                                     *
                              *                LOW FLOW: - - - . 0       - 130 . 0        - - - . 3       - - - . 0        - 135 . 0 *
   AVERAGE FLOW:     709 CFS  *                                                                                                     *
                              * NO. OF DISCHARGERS                                                                                  *
   LOW FLOW:      40 CFS      *          NEXT ADJACENT:        1                17               2             12                32 *
                              *              WITH FLOW:        1                17               2              0                20 *
                              *                                                                                                     *
                              *             CUMULATIVE: - - - - - 1/1   - - - - - 17/17   - - - - - 2/2  - - - - - 12/0  - - - - - 32/20 *
                              *                                                                                                     *
                              ***********************************************************************************************************
   NUMBER OF INDUSTRIAL
   DISCHARGERS *************************************************************************************************************************
   *                  1     * 2       * 3       * 4       * 5       * 6       * 7       * 8       * 9       * 10      * 11      *
   * NEXT ADJACENT:      12 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *
   *                        *         *         *         *         *         *         *         *         *         *         *
   *    CUMULATIVE: - - - 12 * - - - - * - - - - * - - - - * - - - - * - - - - * - - - - * - - - - * - - - - * - - - - * - - - - *
   *                        *         *         *         *         *         *         *         *         *         *         *
   *              12        * 13      * 14      * 15      * 16      * 17      * 18      * 19      * 20      * 21      * 22      *
   * NEXT ADJACENT:       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *
   *                        *         *         *         *         *         *         *         *         *         *         *
   *    CUMULATIVE: - - - - * - - - - * - - - - * - - - - * - - - - * - - - - * - - - - * - - - - * - - - - * - - - - * - - - - *
   *                        *         *         *         *         *         *         *
   *              23        * 24      * 25      * 26      * 27      * 28      *  TOTAL  *
   * NEXT ADJACENT:       2 *       0 *       1 *       0 *      37 *      22 *      74 *
   *                        *         *         *         *         *         *         *
   **** CUMULATIVE: - - - 2 * - - - - * - - - 1 * - - - - * - - - 37 * - - - 22 * - - - 74 *

   DOWNSTREAM
    UTILITY       U P S T R E A M    U T I L I T Y    I D E N T I F I C A T I O N    N U M B E R S

   77777777777772  08181801500000  00000000000000  00000000000000  00000000000000  00000000000000  00000000000000

                   00000000000000  00000000000000
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                                   SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, S2377
DATE  01/05/79                                                                                                        PAGE:      8

                                                                                                          RETAIL POPULATION
PUB            UTILITY NAME                UTILITY ID NO   RECORD CODE  STATE  COUNTY  CITY               SERVED (X 1,000)
-------------------------------------------------------------------------------------------------------------------------------
470   ROCK HILL                            45274900000000     001455      SC     019   ROCK HILL                426

   RECORD KEY  001456         ******************** E F F L U E N T   D I S C H A R G E  *******************************************
                              *
   SOURCE   CATAWBA RIVER     *                          PRIMARY       SECONDARY        TERTIARY          UNKNOWN          TOTAL
                              * DISCHARGE FLOW, (CFS)
   ZERO WASTE CODE  1         *            NEXT ADJACENT        0              27              0                0               27
                              *
   LATITUDE  345908           *               CUMULATIVE  _ _ _ _ 0   _ _ _ _ _61   _ _ _ _ _ 0    _ _ _ _ _ 1    _ _ _ _ _62
                              *
   LONGITUDE  0805832         *   PERCENT WASTEWATER
                              *             AVERAGE FLOW  _ _ _   0     _ _ 1   3     _ _ _   0      _ _ _   0      _ _ 1   4
                              *
                              *                 LOW FLOW  _ _ _   0     _ _ 8   4     _ _ _   0      _ _ _   1      _ _ 8   5
   AVERAGE FLOW    4,548 CFS  *
                              * NO  OF DISCHARGERS
   LOW FLOW      728 CFS      *           NEXT ADJACENT        2               8              0                1               11
                              *               WITH FLOW        2               8              0                0               10
                              *
                              *           CUMULATIVE  _ _ _ _ _2/2   _ _ _ _ _19/19 _ _ _ _ _ 0    _ _ _ _ _4/2    _ _ _ _ _25/23
                              *
                              *****************************************************************************************************

   NUMBER OF INDUSTRIAL
   DISCHARGERS *********************************************************************************************************************
   *                 1      *  2      *  3      *  4      *  5      *  6      *  7      *  8      *  9      *  10     *  11
   * NEXT ADJACENT:        2 *       0 *       0 *       0 *       0 *       0 *       2 *       0 *      13 *       0 *       2
   *                         *         *         *         *         *         *         *         *         *         *
   *    CUMULATIVE: _ _ _  2 * _ _ _ _ * _ _ _ _ * _ _ _  1 * _ _ _ _ * _ _ _ _ * _ _ _  2 * _ _ _ _ * _ _ _ 26 * _ _ _ _ * _ _ _  7
   *                         *         *         *         *         *         *         *         *         *         *
   *                12       *  13     *  14     *  15     *  16     *  17     *  18     *  19     *  20     *  21     *  22
   * NEXT ADJACENT:        0 *       2 *       0 *       1 *       0 *       0 *       1 *       2 *       0 *       0 *       0
   *                         *         *         *         *         *         *         *         *         *         *
   *    CUMULATIVE: _ _ _ _  * _ _ _  3 * _ _ _  1 * _ _ _  1 * _ _ _ _ * _ _ _ _ * _ _ _  2 * _ _ _  2 * _ _ _ _ * _ _ _ _ * _ _ _ _
   *                         *         *         *         *         *         *         *
   *                23       *  24     *  25     *  26     *  27     *  28     *  TOTAL  *
   * NEXT ADJACENT         0 *       0 *       3 *       0 *      11 *       4 *      43 *
   *                         *         *         *         *         *         *         *
   **** CUMULATIVE: _ _ _  1 * _ _ _ _ *       6 * _ _ _ _ * _ _ _ 26 * _ _ _ 19 * _ _ _ 99 *

   DOWNSTREAM
     UTILITY       U P S T R E A M    U T I L I T Y    I D E N T I F I C A T I O N    N U M B E R S

   45164700000000  37234600000000  00000000000000  00000000000000  00000000000000  00000000000000  00000000000000

                   00000000000000  00000000000000
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                              SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, 82377
DATE: 12/22/78                                                                                                     PAGE:   575

                                                                                                            RETAIL POPULATION
PUB          UTILITY NAME               UTILITY ID NO.   RECORD CODE  STATE  COUNTY  CITY                   SERVED (X 1,000)
***************************************************************************************************************************
610   ST LOUIS A CITY                   29714001560000     000791       MO    077    ST LOUIS                          600

   ECORD KEY: 000792         ******************** E F F L U E N T   D I S C H A R G E ***********************************
                             *                                                                                            *
   OURCE: MISSOURI RIVER     *                               PRIMARY       SECONDARY        TERTIARY       UNKNOWN        TOTAL  *
                             * DISCHARGE FLOW,(CFS)
   ERO WASTE CODE: 1         *             NEXT ADJACENT:        10               7               0             0           17  *
                             *
   ATITUDE: 370009           *                CUMULATIVE: _ _ _1,158     _ _ _ _442      _ _ _ _ _23     _ _ _ _127     _ _ _ _750  *
                             *
   ONGITUDE: 0240010         *   PERCENT WASTEWATER
                             *             AVERAGE FLOW:  _ _ _ . 3     _ _ 1 . 8      _ _ _ _ . 0     _ _ _ . 2      _ _ 1 . 3  *
                             *
                             *                 LOW FLOW:  _ _ 2 . 6     _ _17 . 4      _ _ _ _ . 4     _ _ 2 . 1      _ _12 . 5  *
   VERAGE FLOW:  57,883 CFS  *
                             * NO. OF DISCHARGERS
   OW FLOW:   5,986 CFS      *          NEXT ADJACENT:         2              33               0           129          164  *
                             *              WITH FLOW:         2              33               0             0            7  *
                             *
                             *             CUMULATIVE: _ _ _ _ _37/37 _ _ _ _678/671_ _ _ _ _11/11 _ _ _ _883/35 _ _ _1,609/754*
                             *
                             ********************************************************************************************
   UMBER OF INDUSTRIAL
   ISCHARGERS ****************************************************************************************************************
   :              1       * 2       * 3       * 4       * 5       * 6       * 7       * 8       * 9       * 10      * 11        *
   : NEXT ADJACENT:     34 *       7 *       4 *       4 *       0 *       1 *       0 *       0 *       0 *       1 *       0   *
   :                       *         *         *         *         *         *         *         *         *         *           *
   :    CUMULATIVE: _ _287 * _ _112 * _ _ _46 * _ _ _11 * _ _ _ 4 * _ _ _ 9 * _ _ _40 * _ _ _ 1 * _ _ _ 2 * _ _ _ 5 * _ _ _ _     *
   :                       *         *         *         *         *         *         *         *         *         *           *
   :             12        * 13      * 14      * 15      * 16      * 17      * 18      * 19      * 20      * 21      * 22        *
   : NEXT ADJACENT:      1 *       0 *       2 *       0 *       0 *       1 *       0 *       1 *       0 *       0 *       0   *
   :                       *         *         *         *         *         *         *         *         *         *           *
   :    CUMULATIVE: _ _ _ 3 * _ _ _ 7 * _ _ _12 * _ _ _10 * _ _ _ 3 * _ _ _ 1 * _ _ _ _ * _ _ _14 * _ _ _21 * _ _ _ 2 * _ _ _ _     *
   :                       *         *         *         *         *         *         *
   :             23        * 24      * 25      * 26      * 27      * 28      *  TOTAL  *
   : NEXT ADJACENT:      3 *       0 *       8 *       0 *     194 *     432 *     693 *
   :                       *         *         *         *         *         *         *
   **** CUMULATIVE: _ _ _54 * _ _ _ 3 * _ _ _40 * _ _ _ 1 * _1,835 * _1,773 * _4,276 *

   OWNSTREAM
    UTILITY       U P S T R E A M    U T I L I T Y    I D E N T I F I C A T I O N    N U M B E R S

   29709201580000   29415801540000                 29281801992000  00000000000000            00  00000000000000

                    00000000000000  00000000000000
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                         SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, 82377
DATE: 12/22/78                                                                                         PAGE:   574

                                                                                                 RETAIL POPULATION
PUB          UTILITY NAME              UTILITY ID NO.   RECORD CODE  STATE  COUNTY  CITY            SERVED (X 1,000)
---------------------------------------------------------------------------------------------------------------------
610   ST LOUIS A CITY                  29714001560000     000791      MO     077    ST LOUIS              600

  ECURD KEY: 000793           ******************** E F F L U E N T   D I S C H A R G E ****************************
                              *                                                                                    *
  OURCE: MISSISSIPPI RIVE     *                       PRIMARY     SECONDARY      TERTIARY      UNKNOWN      TOTAL  *
                              * DISCHARGE FLOW,(CFS)                                                               *
  ERU WASTE CODE: 1           *         NEXT ADJACENT:      0             0             0            0          0  *
                              *                                                                                    *
  ATITUDE: 000901             *           CUMULATIVE: _ _ _ _273  _ _ _ 3,394  _ _ _ _ _55  _ _ _ _ 222  _ _ _ 3,944  *
                              *                                                                                    *
  ONGITUDE: 5001001           *   PERCENT WASTEWATER                                                               *
                              *         AVERAGE FLOW: _ _ _ . 2   _ _ 1 . 9    _ _ _ . 0    _ _ _ . 1    _ _ 2 . 2  *
                              *                                                                                    *
                              *             LOW FLOW: _ _ _ . 7   _ _ 8 . 8    _ _ _ . 1    _ _ _ . 5    _ _10 . 2  *
                              *                                                                                    *
  VERAGE FLOW: 176,800 CFS    *                                                                                    *
                              * NO. OF DISCHARGERS                                                                 *
  OW FLOW:  38,710 CFS        *        NEXT ADJACENT:     0             0             0             7            7  *
                              *           WITH FLOW:      0             0             0             0            0  *
                              *                                                                                    *
                              *          CUMULATIVE: _ _ _ _129/127- - - 1,296/1,263- - - -37/34 - - - 1,721/102- - - 3,183/1,526
                              *                                                                                    *
                              **************************************************************************************
  UMBER OF INDUSTRIAL
  ISCHARGERS ******************************************************************************************************
                        1      * 2      * 3      * 4      * 5      * 6      * 7      * 8      * 9      * 10     * 11      *
     NEXT ADJACENT:         0  *     0  *     1  *     0  *     0  *     0  *     0  *     0  *     0  *     0  *      0  *
                               *        *        *        *        *        *        *        *        *        *         *
       CUMULATIVE: _ _457      * _ _149 * _ _ _83* _ _177 * _ _ _28* _ _ _27* _ _ _77* _ _ _ 2* _ _ _45* _ _ _14* _ _ _ 9  *
                               *        *        *        *        *        *        *        *        *        *         *
                       12      * 13     * 14     * 15     * 16     * 17     * 18     * 19     * 20     * 21     * 22      *
     NEXT ADJACENT:         0  *     0  *     1  *     0  *     1  *     0  *     0  *     0  *     0  *     0  *      0  *
                               *        *        *        *        *        *        *        *        *        *         *
       CUMULATIVE: _ _ _63     * _ _ _23* _ _ _61* _ _ _35* _ _ _27* _ _ _ 6* _ _ _ 2* _ _ _61* _ _ _39* _ _ _ 6* _ _ _ 1  *
                               *        *        *        *        *        *        *
                       23      * 24     * 25     * 26     * 27     * 28     *  TOTAL *
     NEXT ADJACENT:         3  *     0  *     4  *     0  *     8  *    14  *     32 *
                               *        *        *        *        *        *        *
   *** CUMULATIVE: _ _181      * _ _ _18* _ _209 * _ _ _ 6* _3,510 * _2,874 * _8,345 *

  OWNSTREAM
   UTILITY         U P S T R E A M    U T I L I T Y    I D E N T I F I C A T I O N    N U M B E R S

 17233401530000    17016201510000  00000000000000  29709201580000  00000000000000  00000000000000  00000000000000

                   00000000000000  00000000000000
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                                   SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, 82377
DATE: 12/22/78                                                                                                          PAGE:   688

                                                                                                                  RETAIL POPULATION
PUB           UTILITY NAME                 UTILITY ID NO.   RECORD CODE  STATE  COUNTY  CITY                      SERVED (X 1,000)
********************************************************************************************************************************
660   SAN PATRICIO MWD                     48430501500000     001558       TX     027   INGLESIDE                         30

   RECORD KEY: 001559          ******************** E F F L U E N T   D I S C H A R G E ****************************************
                               *                                                                                              *
   SOURCE:  NUECES RIVER       *                             PRIMARY        SECONDARY        TERTIARY        UNKNOWN        TOTAL *
                               * DISCHARGE FLOW,(CFS)                                                                          *
   ZERO WASTE CODE: 1          *             NEXT ADJACENT:        0               26               0              2           28 *
                               *                                                                                              *
   LATITUDE: 275250            *                CUMULATIVE: _____0           _____28           _____0          _____2        _____30 *
                               *                                                                                              *
   LONGITUDE: 0973440          *   PERCENT WASTEWATER                                                                          *
                               *             AVERAGE FLOW:  ___._0         __3_._3          ___._0          ___._2         __3_._5 *
                               *                                                                                              *
                               *                 LOW FLOW:  ___._0         _121_._7         ___._0          __8_._7        _130_._4 *
   AVERAGE FLOW:     859 CFS   *                                                                                              *
                               * NO. OF DISCHARGERS                                                                           *
   LOW FLOW:      23 CFS       *           NEXT ADJACENT:        0                5                0              2            7 *
                               *               WITH FLOW:        0                5                0              1            6 *
                               *                                                                                              *
                               *              CUMULATIVE: _____0          _____14/14        _____0          _____5/1       _____19/14 *
                               *                                                                                              *
                               ********************************************************************************************************
NUMBER OF INDUSTRIAL
DISCHARGERS ****************************************************************************************************************
*                  1     * 2      * 3      * 4      * 5      * 6      * 7      * 8      * 9      * 10     * 11        *
* NEXT ADJACENT:       0 *      0 *      0 *      0 *      0 *      0 *      0 *      0 *      0 *      0 *      0    *
*                        *        *        *        *        *        *        *        *        *        *           *
*    CUMULATIVE: ____    * ____   * ____   * ____   * ____   * ____   * ____   * ____   * ____   * ____   * ____      *
*                        *        *        *        *        *        *        *        *        *        *           *
*                 12     * 13     * 14     * 15     * 16     * 17     * 18     * 19     * 20     * 21     * 22        *
* NEXT ADJACENT:       0 *      0 *      0 *      0 *      0 *      0 *      0 *      0 *      0 *      0 *      0    *
*                        *        *        *        *        *        *        *        *        *        *           *
*    CUMULATIVE: ____    * ____   * ____   * ____   * ____   * ____   * ____   * ____   * ____   * ____   * ____      *
*                        *        *        *        *        *        *        *
*                 23     * 24     * 25     * 26     * 27     * 28     *  TOTAL *
* NEXT ADJACENT:       0 *      0 *      0 *      0 *      7 *      0 *      7 *
*                        *        *        *        *        *        *        *
**** CUMULATIVE: ____    * ____   * ____   * ____   * ___19  * ____   * ___19  *

DOWNSTREAM
  UTILITY        U P S T R E A M    U T I L I T Y    I D E N T I F I C A T I O N    N U M B E R S

           00    48203001610000  00000000000000  00000000000000  00000000000000  00000000000000  00000000000000

                 00000000000000  00000000000000
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                          SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM  S2377
DATE: 01/05/79                                                                                          PAGE:      6

                                                                                                 RETAIL POPULATION
PUB            UTILITY NAME                 UTILITY ID NO.   RECORD CODE  STATE  COUNTY  CITY      SERVED (X 1,000)
-------------------------------------------------------------------------------------------------------------------
470   SPRINGS MILLS                         45164700000000    001442       SC     019    LANCASTER              25

   RECORD KEY: 001443           ******************* E F F L U E N T   D I S C H A R G E ****************************************
                                *
   SOURCE:  CATAWBA RIVER       *                           PRIMARY       SECONDARY       TERTIARY        UNKNOWN          TOTAL
                                * DISCHARGE FLOW,(CFS)
   ZERO WASTE CODE: 1           *            NEXT ADJACENT:       0              77              0              0             77
                                *
   LATITUDE: 344220             *               CUMULATIVE: _ _ _ _ 0     _ _ _ _ 138     _ _ _ _ _ 0     _ _ _ _ _ 1     _ _ _ _ 139
                                *
   LONGITUDE: 0805152           *   PERCENT WASTEWATER
                                *             AVERAGE FLOW:  _ _ _  0      _ _ 2 . 3       _ _ _  0        _ _ _  0       _ _ 2 . 3
                                *
                                *                 LOW FLOW:  _ _ _  0      _ _13  7        _ _ _  0        _ _ _  1       _ _13  8
   AVERAGE FLOW:   6,039 CFS    *
                                * NO. OF DISCHARGERS
   LOW FLOW:   1,007 CFS        *            NEXT ADJACENT:       2               8              1              6             17
                                *                WITH FLOW:       2               8              1              1             12
                                *
                                *               CUMULATIVE: _ _ _ _ _4/4   _ _ _ _ 21/27  _ _ _ _ _ 1/1   _ _ _ _ 10/3    _ _ _ _ 42/35
                                *
                                ****************************************************************************************************
   NUMBER OF INDUSTRIAL
   DISCHARGERS ***************************************************************************************************************
   *            1     * 2      * 3      * 4      * 5      * 6      * 7      * 8      * 9      * 10     * 11
   * NEXT ADJACENT:   0 *      0 *      0 *      0 *      0 *      0 *      1 *      0 *      5 *      0 *      0
   *                    *        *        *        *        *        *        *        *        *        *
   *    CUMULATIVE: _ _ _2 * _ _ _ _ * _ _ _ _ * _ _ _1 * _ _ _ _ * _ _ _ _ * _ _ _3 * _ _ _ _ * _ _31 * _ _ _ _ * _ _ _7
   *                    *        *        *        *        *        *        *        *        *        *
   *           12     * 13     * 14     * 15     * 16     * 17     * 18     * 19     * 20     * 21     * 22
   * NEXT ADJACENT:   1 *      1 *      1 *      2 *      1 *      0 *      1 *      3 *      0 *      0 *      0
   *                    *        *        *        *        *        *        *        *        *        *
   *    CUMULATIVE: _ _ _1 * _ _ _4 * _ _ _2 * _ _ _3 * _ _ _1 * _ _ _ _ * _ _ _3 * _ _ _5 * _ _ _ _ * _ _ _ _ * _ _ _ _
   *                    *        *        *        *        *        *        *
   *           23     * 24     * 25     * 26     * 27     * 28     * TOTAL  *
   * NEXT ADJACENT:   0 *      0 *      4 *      0 *     17 *     33 *     70 *
   *                    *        *        *        *        *        *        *
   **** CUMULATIVE: _ _ _1 * _ _ _ _ * _ _10 * _ _ _ _ * _ _43 * _ _52 * _ _169 *

   DOWNSTREAM
     UTILITY        U P S T R E A M    U T I L I T Y    I D E N T I F I C A T I O N    N U M B E R S

              00    45274900000000  00000000000000  00000000000000  00000000000000  00000000000000  00000000000000

                    00000000000000  00000000000000
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                       SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, S2377
DATE: 12/22/78                                                                                        PAGE:  511

                                                                                                RETAIL POPULATION
PUB          UTILITY NAME              UTILITY ID NO.  RECORD CODE  STATE  COUNTY  CITY         SERVED (X 1,000)
---------------------------------------------------------------------------------------------------------------------
610   THORNTON - CITY OF               08883901500000     000227      CO     059    THORNTON             60

  RECORD KEY: 000228          ******************** E F F L U E N T   D I S C H A R G E ******************************
                              *                                                                                    *
  SOURCE: CLEAR CREEK         *                                PRIMARY      SECONDARY      TERTIARY     UNKNOWN      TOTAL *
                              * DISCHARGE FLOW,(CFS)                                                               *
  ZERO WASTE CODE: 9          *           NEXT ADJACENT:          0              6              0            0          6  *
                              *                                                                                    *
  LATITUDE: 394942            *              CUMULATIVE: _ _ _ _ _0    _ _ _ _ _ _4    _ _ _ _ _ _0   _ _ _ _ _ _0  _ _ _ _ _ _4 *
                              *                                                                                    *
  LONGITUDE: 1045730          *   PERCENT WASTEWATER                                                               *
                              *           AVERAGE FLOW:  _ _ _ . 0   _ _4 . 5      _ _ _ . 0    _ _ _ . 0    _ _4 . 5 *
                              *                                                                                    *
                              *               LOW FLOW:  _ _ _ . 0   _130 . _      _ _ _ . 0    _ _ _ . 0    _130 . _ *
  AVERAGE FLOW:      89 CFS   *                                                                                    *
                              * NO. OF DISCHARGERS                                                                 *
  LOW FLOW:       3 CFS       *          NEXT ADJACENT:          0              1              0            0          1  *
                              *              WITH FLOW:          0              1              0            0          1  *
                              *                                                                                    *
                              *             CUMULATIVE: _ _ _ _ _0    _ _ _ _ _10/10 _ _ _ _ _0   _ _ _ _ _5/3  _ _ _ _ _12/13 *
                              *                                                                                    *
                              **************************************************************************************

  NUMBER OF INDUSTRIAL
  DISCHARGERS **********************************************************************************************************
  *                  1       * 2       * 3       * 4       * 5       * 6       * 7       * 8       * 9       * 10      * 11      *
  * NEXT ADJACENT:       5   *       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *
  *                          *         *         *         *         *         *         *         *         *         *         *
  *    CUMULATIVE: _ _ _15   * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _1  * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ *
  *                          *         *         *         *         *         *         *         *         *         *         *
  *                 12       * 13      * 14      * 15      * 16      * 17      * 18      * 19      * 20      * 21      * 22      *
  * NEXT ADJACENT:       0   *       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *       0 *
  *                          *         *         *         *         *         *         *         *         *         *         *
  *    CUMULATIVE: _ _ _ _   * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ *
  *                          *         *         *         *         *         *         *
  *                 23       * 24      * 25      * 26      * 27      * 28      *  TOTAL  *
  * NEXT ADJACENT:       0   *       0 *       0 *       0 *       2 *       2 *       9 *
  *                          *         *         *         *         *         *         *
  **** CUMULATIVE: _ _ _1    * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _15 * _ _ _31 * _ _ _63 *

  DOWNSTREAM
   UTILITY         U P S T R E A M    U T I L I T Y    I D E N T I F I C A T I O N    N U M B E R S

  29713401500000   08957601500000  00000000000000  00000000000000  00000000000000  00000000000000  00000000000000

                   00000000000000  00000000000000
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                                    SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, 82377
DATE: 12/22/78                                                                                                     PAGE:  304

PUB          UTILITY NAME               UTILITY ID NO.   RECORD CODE  STATE  COUNTY  CITY                    RETAIL POPULATION
                                                                                                              SERVED (X 1,000)
------------------------------------------------------------------------------------------------------------------------------
350   WASHINGTON SUBURBAN SANITARY COM   24455401510000     000606       MD     005    HYATTSVILLE                  1300

   RECORD KEY: 000608          ******************* E F F L U E N T   D I S C H A R G E ************************************
                               *
   SOURCE: POTOMAC RIVER       *                          PRIMARY        SECONDARY        TERTIARY        UNKNOWN          TOTAL  *
                               * DISCHARGE FLOW,(CFS)                                                                             *
   ZERO WASTE CODE: 1          *          NEXT ADJACENT:        7               31               0              1             39  *
                               *                                                                                                  *
   LATITUDE: 000000            *             CUMULATIVE: _____20        _____66         _____1          _____5        _____92   *
                               *                                                                                                  *
   LONGITUDE: 0000000          *   PERCENT WASTEWATER                                                                             *
                               *           AVERAGE FLOW:  ___._2         ___._6          ___._0          ___._0         ___._8   *
                               *                                                                                                  *
                               *              LOW FLOW:   __3_._3        __11_._0        ___._2          ___._8         __15_._3  *
   AVERAGE FLOW:  11,190 CFS   *                                                                                                  *
                               * NO. OF DISCHARGERS                                                                               *
   LOW FLOW:     602 CFS       *         NEXT ADJACENT:         5               40               3              41             89  *
                               *             WITH FLOW:         5               40               1               5             51  *
                               *                                                                                                  *
                               *            CUMULATIVE: _____10/ 9    ______61/ 58 ______6/ 4     ______74/ 17  ______151/ 88 *
                               *                                                                                                  *
                               ************************************************************************************************
   NUMBER OF INDUSTRIAL
   DISCHARGERS ***************************************************************************************************************
   *            1   * 2      * 3      * 4      * 5      * 6      * 7      * 8      * 9      * 10     * 11     *
   * NEXT ADJACENT:  14 *     0 *     5 *     2 *     5 *     0 *     0 *     0 *     1 *     0 *     0 *
   *                    *       *       *       *       *       *       *       *       *       *       *
   *   CUMULATIVE: ___25 * __146 * ___9 * ___3 * ___8 * ____ * ____ * ____ * ___1 * ___1 * ____ *
   *                    *       *       *       *       *       *       *       *       *       *       *
   *           12   * 13     * 14     * 15     * 16     * 17     * 18     * 19     * 20     * 21     * 22     *
   * NEXT ADJACENT:   1 *     3 *     2 *     1 *     1 *     0 *     0 *     2 *     0 *     1 *     2 *
   *                    *       *       *       *       *       *       *       *       *       *       *
   *   CUMULATIVE: ___2 * ___3 * ___5 * ___1 * ___2 * ____ * ____ * ___5 * ___1 * ___1 * ___5 *
   *                    *       *       *       *       *       *       *       *
   *           23   * 24     * 25     * 26     * 27     * 28     *  TOTAL *
   * NEXT ADJACENT:   5 *     0 *    11 *     1 *   111 *    83 *    251 *
   *                    *       *       *       *       *       *        *
   **** CUMULATIVE: ___13 * ____ * ___12 * ___1 * __183 * __161 * __588 *

   DOWNSTREAM
    UTILITY       U P S T R E A M     U T I L I T Y     I D E N T I F I C A T I O N     N U M B E R S

            00    24334801500000   51309601500000 24406801500000  00000000000000  00000000000000  00000000000000

                  00000000000000   00000000000000
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                              SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, 82377
DATE: 12/22/78                                                                                                   PAGE:   510

PUB          UTILITY NAME               UTILITY ID NO.   RECORD CODE  STATE  COUNTY  CITY                    RETAIL POPULATION
                                                                                                              SERVED (X 1,000)
-----------------------------------------------------------------------------------------------------------------------------
610   WESTMINSTER - CITY OF             08957601500000     000230       CO     059    WESTMINSTER                  35

   RECORD KEY: 000231          ******************** E F F L U E N T   D I S C H A R G E ****************************************
                               *                                                                                               *
   SOURCE:  CLEAR CREEK        *                            PRIMARY      SECONDARY        TERTIARY        UNKNOWN          TOTAL *
                               * DISCHARGE FLOW,(CFS)                                                                          *
   ZERO WASTE CODE: 1          *            NEXT ADJACENT:        0              3               0              0              3 *
                               *                                                                                               *
   LATITUDE: 394630            *               CUMULATIVE: _ _ _ _ _0    _ _ _ _ _ _3    _ _ _ _ _ _0    _ _ _ _ _ _0    _ _ _ _ _ _3 *
                               *                                                                                               *
   LONGITUDE: 1051030          *   PERCENT WASTEWATER                                                                          *
                               *            AVERAGE FLOW:  _ _ _ . 0      _ _ 3 . 2       _ _ _ . 0       _ _ _ . 0       _ _ 3 . 2 *
                               *                                                                                               *
                               *                LOW FLOW:  _ _ _ . 0      _ 150 . 0       _ _ _ . 0       _ _ _ . 0       _ 150 . 0 *
   AVERAGE FLOW:       94 CFS  *                                                                                               *
                               * NO. OF DISCHARGERS                                                                            *
   LOW FLOW:        2 CFS      *          NEXT ADJACENT:        0              3               0               0               3 *
                               *             WITH FLOW:         0              3               0               0               3 *
                               *                                                                                               *
                               *             CUMULATIVE: _ _ _ _ _0    _ _ _ _ _ _9/6  _ _ _ _ _ _0    _ _ _ _ _ _5/3  _ _ _ _ _ _11/9 *
                               *                                                                                               *
                               *************************************************************************************************
   NUMBER OF INDUSTRIAL
   DISCHARGERS ******************************************************************************************************************
   *                    1    * 2        * 3        * 4        * 5        * 6        * 7        * 8        * 9        * 10       * 11       *
   * NEXT ADJACENT:        3 *        0 *        0 *        0 *        0 *        0 *        0 *        0 *        0 *        0 *        0 *
   *                         *          *          *          *          *          *          *          *          *          *          *
   *    CUMULATIVE: _ _ _10  * _ _ _ _  * _ _ _ _  * _ _ _ _  * _ _ _ _  * _ _ _ _  * _ _ _1   * _ _ _ _  * _ _ _ _  * _ _ _ _  * _ _ _ _  *
   *                         *          *          *          *          *          *          *          *          *          *          *
   *                   12    * 13       * 14       * 15       * 16       * 17       * 18       * 19       * 20       * 21       * 22       *
   * NEXT ADJACENT:        0 *        0 *        0 *        0 *        0 *        0 *        0 *        0 *        0 *        0 *        0 *
   *                         *          *          *          *          *          *          *          *          *          *          *
   *    CUMULATIVE: _ _ _ _  * _ _ _ _  * _ _ _ _  * _ _ _ _  * _ _ _ _  * _ _ _ _  * _ _ _ _  * _ _ _ _  * _ _ _ _  * _ _ _ _  * _ _ _ _  *
   *                         *          *          *          *          *          *          *
   *                   23    * 24       * 25       * 26       * 27       * 28       *  TOTAL   *
   * NEXT ADJACENT:        0 *        0 *        0 *        0 *        3 *        7 *       13 *
   *                         *          *          *          *          *          *          *
   **** CUMULATIVE: _ _ _1   * _ _ _ _  * _ _ _ _  * _ _ _ _  * _ _ _13  * _ _ _29  * _ _ _54  *

   DOWNSTREAM
    UTILITY          U P S T R E A M    U T I L I T Y    I D E N T I F I C A T I O N    N U M B E R S

   08883901500000    08532901510000  00000000000000  00000000000000  00000000000000  00000000000000  00000000000000

                     00000000000000  00000000000000
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                         SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, 82377
DATE: 12/22/78                                                                                                   PAGE:  361

                                                                                                        RETAIL POPULATION
PUB          UTILITY NAME                UTILITY ID NO.   RECORD CODE  STATE  COUNTY  CITY                SERVED (X 1,000)
------------------------------------------------------------------------------------------------------------------------------
430   WEST POINT PEPPERELL INC            01473001520000    000020        AL     047    LANGDALE                   25

   RECORD KEY: 000021           ******************** E F F L U E N T   D I S C H A R G E ****************************************
                                *                                                                                                *
   SOURCE:  CHATTAHOOCHEE R     *                              PRIMARY       SECONDARY        TERTIARY         UNKNOWN        TOTAL  *
                                * DISCHARGE FLOW,(CFS)                                                                            *
   ZERO WASTE CODE: 1           *             NEXT ADJACENT:         0              14               0               0           14  *
                                *                                                                                                *
   LATITUDE: 325410             *                CUMULATIVE: _ _ _ _ _0      _ _ _ _ 214     _ _ _ _ _ 0     _ _ _ _ _ 0    _ _ _ _214  *
                                *                                                                                                *
   LONGITUDE: 0851131           *   PERCENT WASTEWATER                                                                           *
                                *              AVERAGE FLOW:   _ _ _ . 0     _ _ 3 . 8       _ _ _ . 0       _ _ _ . 0      _ _ 3 . 8  *
                                *                                                                                                *
                                *                  LOW FLOW:   _ _ _ . 0     _ _28 . 4       _ _ _ . 0       _ _ _ . 0      _ _28 . 4  *
   AVERAGE FLOW:   5,632 CFS    *                                                                                                *
                                * NO. OF DISCHARGERS                                                                              *
   LOW FLOW:      754 CFS       *             NEXT ADJACENT:         1               4               0               0            5  *
                                *                WITH FLOW:          1               4               0               0            5  *
                                *                                                                                                *
                                *               CUMULATIVE: _ _ _ _ _ _1/1  _ _ _ _ _ _19/18 _ _ _ _ _ _0     _ _ _ _ _ _1/1  _ _ _ _ _ _21/20 *
                                *                                                                                                *
                                **************************************************************************************************
   NUMBER OF INDUSTRIAL
   DISCHARGERS **************************************************************************************************************
   *              1      * 2         * 3         * 4         * 5         * 6         * 7         * 8         * 9         * 10        * 11        *
   * NEXT ADJACENT:     0 *         0 *         0 *         0 *         0 *         0 *         0 *         0 *         3 *         0 *         0 *
   *                      *           *           *           *           *           *           *           *           *           *           *
   *    CUMULATIVE: _ _ _ * _ _ _ _ * _ _ _ _2 * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _6 * _ _ _ _ * _ _ _ _   *
   *                      *           *           *           *           *           *           *           *           *           *           *
   *             12       * 13        * 14        * 15        * 16        * 17        * 18        * 19        * 20        * 21        * 22        *
   * NEXT ADJACENT:     0 *         0 *         0 *         0 *         0 *         0 *         0 *         0 *         0 *         0 *         0 *
   *                      *           *           *           *           *           *           *           *           *           *           *
   *    CUMULATIVE: _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _ _ * _ _ _1   *
   *                      *           *           *           *           *           *           *
   *             23       * 24        * 25        * 26        * 27        * 28        *   TOTAL   *
   * NEXT ADJACENT:     0 *         0 *         0 *         0 *         6 *         2 *        11 *
   *                      *           *           *           *           *           *           *
   **** CUMULATIVE: _ _ _1 * _ _ _ _ * _ _ _ _2 * _ _ _ _ * _ _ _ 22 * _ _ _ _5 * _ _ _ 39 *

   DOWNSTREAM
    UTILITY          U P S T R E A M    U T I L I T Y    I D E N T I F I C A T I O N    N U M B E R S

   01643001500000    13489501500000  00000000000000  00000000000000  00000000000000  00000000000000  00000000000000

                     00000000000000  00000000000000
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DATE: 12/22/78           SCS ENGINEERS - WASTEWATER CALCULATION WORKSHEET  -  WIRW SYSTEM, 52377
                                                                                                   PAGE:   459
PUB          UTILITY NAME               UTILITY ID NO,   RECORD CODE  STATE  COUNTY  CITY                RETAIL POPULATION
                                                                                                     SERVED (X 1,000)
-------------------------------------------------------------------------------------------------------------------
502   CITY OF YPSILANTI WATER DEPT      26997601500000     000759       MI    161    YPSILANTI                30
   RECORD KEY: 000760      ******************* E F F L U E N T   D I S C H A R G E ****************************
                           *                                                                                  *
   SOURCE:  HURON RIVER    *                         PRIMARY     SECONDARY      TERTIARY      UNKNOWN       TOTAL *
                           * DISCHARGE FLOW,(CFS)                                                                 *
   ZERO WASTE CODE: 1      *          NEXT ADJACENT:       0            50             0            0          50 *
                           *                                                                                  *
   LATITUDE: 421630        *            CUMULATIVE: -----0       -----50        -----0       -----0      -----50 *
                           *                                                                                  *
   LONGITUDE: 0833736      *   PERCENT WASTEWATER                                                             *
                           *          AVERAGE FLOW:  ---.0       --12.7         ---.0        ---.0       --12.7 *
                           *                                                                                  *
   AVERAGE FLOW:   394 CFS *              LOW FLOW:  ---.0       -119.0         ---.0        ---.0       -119.0 *
                           *                                                                                  *
   LOW FLOW:     42 CFS    * NO, OF DISCHARGERS                                                               *
                           *        NEXT ADJACENT:       0             5             1            3           9 *
                           *            WITH FLOW:       0             5             1            1           7 *
                           *                                                                                  *
                           *           CUMULATIVE: -----0        -----5/5      -----1/1     -----3/1     -----9/7 *
                           *                                                                                  *
                           ************************************************************************************
NUMBER OF INDUSTRIAL
DISCHARGERS ************************************************************************************************
*                   1   * 2     * 3     * 4     * 5     * 6     * 7     * 8     * 9     * 10    * 11    *
* NEXT ADJACENT:      1 *     0 *     0 *     0 *     0 *     0 *     1 *     0 *     0 *     0 *     0 *
*                       *       *       *       *       *       *       *       *       *       *       *
*    CUMULATIVE: ---1   * ----  * ----  * ----  * ----  * ----  * ---1  * ----  * ----  * ----  * ----  *
*                  12   * 13    * 14    * 15    * 16    * 17    * 18    * 19    * 20    * 21    * 22    *
* NEXT ADJACENT:      0 *     0 *     1 *     0 *     0 *     0 *     0 *     1 *     0 *     0 *     0 *
*                       *       *       *       *       *       *       *       *       *       *       *
*    CUMULATIVE: ----   * ----  * ---1  * ----  * ----  * ----  * ----  * ---1  * ----  * ----  * ----  *
*                  23   * 24    * 25    * 26    * 27    * 28    *  TOTAL*
* NEXT ADJACENT:      1 *     1 *     7 *     0 *    12 *    13 *    38 *
*                       *       *       *       *       *       *       *
**** CUMULATIVE: ---1   * ---1  * ---7  * ----  * --12  * --13  * --38  *
DOWNSTREAM
 UTILITY        U P S T R E A M   U T I L I T Y   I D E N T I F I C A T I O N   N U M B E R S

        00            00 00000000000000  00000000000000  00000000000000  00000000000000  00000000000000

           00000000000000  00000000000000
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